Public Health Reports

Treasury Department, United States Marine-Hospital Service. Published in accordance with act of Congress approved February 15, 1893.

VOL. XV. WASHINGTON, D. C., NOVEMBER 2, 1900. No. 44.

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NOTICE.

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UNITED STATES.

[Reports to the Surgeon-General United States Marine-Hospital Service.]

NEW METHODS FOR THE PURIFICATION OF THE WATER SUPPLIES OF CITIES AND TOWNS.

In view of the very general interest which is being manifested at the present time in the subject of the purification on a large scale of the water intended for the use of communities, the two following articles on the subject are reproduced.

Both methods are in practical operation in large European cities, and both seem to be giving satisfaction. Each method has special features which recommend it, but both possess in common the feature that there is no chemical added to the water to be purified, which is permanently left therein, and the chemical composition of the water is not injuriously modified.

The cuts which accompanied the articles are not reproduced, as the sources from which full information on the subject can be obtained are sufficiently indicated in the course of the articles.

Sterilization of water by chloric peroxide and by ozone.

OFFICE OF CONSUL-GENERAL OF THE UNITED STATES,
Paris, France, October 6, 1900.

SIR: I have the honor to submit the following report upon the sterilization of potable water in large and small quantities by two processes, both depending on the action upon albuminous matter and other organic material of unstable oxygen compounds, in one case chloric peroxide, in the other ozone.

The first method was reported upon by M. Bergé, of Brussels, at the fourth international congress of applied chemistry, at which I had the honor to represent the Service; and the latter, perfected by Messrs. Marmier and Abraham, was mentioned in the discussion of this paper, and again at the tenth international congress of hygiene and demography.

I have obtained such data as are available on both methods, and would present the following brief account of each:

The first process depends upon the solubility in water of the unstable chloric peroxide gas which by its strong oxidizing power is strongly bactericidal and at the same time acts upon much of the organic matter found in ordinary water, especially compounds of nitrogen and sulphur. The chloric peroxide is generated by means of sulphuric acid and potassic chlorate according to the following equation:

$$3\ K\ cl\ O_3 + 2\ H_2SO_4 = K\ cl\ O_4 + 2\ KHSO_4 + H_2O + 2\ cl\ O_2$$

It is then dissolved in water to form a sterilizing solution of standard strength and this solution is mixed with the water to be sterilized regularly and in a proportion depending upon the original purity of the water. The details are thus described by M. Bergé:

Sulphuric acid at 58° B. decomposes slowly the chlorate of potassium. A current of air draws out the gas in proportion to its production. This air charged with peroxide of chlorine can be led directly into the water to be purified. It is more practicable, however, to prepare by aid of this latter a concentrated solution of peroxide which poured regularly into the water sterilizes it in a continuous fashion.

Diagram 1 is the scheme of the apparatus used for the preparation of solutions of peroxide of chlorine. A pump forces air into a reservoir. This air is dried more or less by passing first into a lead chamber containing sulphuric acid. From there it enters at the bottom of a second lead chamber, also containing sulphuric acid, but connected with a second chamber above containing the chlorate and having an annealed shaft passing through its center, which by a to-and fro movement assures the regular and continuous arrival of the chlorate. The air charged with peroxide arrives at the base of a tower filled with porous stones, and is dissolved there to form the sterilizing liquid which is collected in a reservoir.

It only remains to have an apparatus to add this liquid regularly to the water to be sterilized and to mix the same. After this it is let stand in a reservoir fifteen minutes, and then is poured in a cascade over coke. After ten minutes contact with the coke it is delivered for consumption.

"The expense of the production of the peroxide is very slight, in fact the dose of potassic chlorate varies according to the waters from one-half to 3 grams per meter cube. Valuing the chlorate at $20 per 100 kilograms and the 300 kilograms of H_2SO_4 necessary for its decomposition at $6, we arrive at the expense of thirteen five hundredths of a cent per meter, cube, gramme of water to be sterilized."

At Ostend, Belgium, where a station has been equipped to sterilize by this process 5,000 cubic meters daily of water after it has passed through sand filters, the expense is twenty-six five-hundredths of a cent per cubic meter, as this water requires 2 grams of potassic chlorate per cubic meter.

Many tests made by competent bacteriologists have demonstrated that at the end of fifteen minutes the sterilization of the water is assured. After that by passing the water over a cascade or ærator made of coke it is possible to deliver it directly for consumption, as this process destroys all the reagent in the water. According to M. Bergé this last procedure is not necessary in practice except as an additional precaution in case the water should be immediately drunk. Beside such excess is destroyed in a very few minutes in the water simply standing in the tanks, and even if remaining, it is claimed, has no injurious effects.

Dr. Desguin, former president of the Royal Academy of Medicine of Belgium, in his experiments on the persistence of this reagent dissolved in water, employed a solution three or more times the normal strength. He wrote:

"In this case the odor persists a little longer, the color, when the proportion was exaggerated, changed and became a yellowish green, but the odor and the color became normal in less than two hours; as to the taste it always remained the same as in other tests."

A priori we can conclude from what precedes that water sterilized by chloric peroxide should unite all the requirements of potable water; first, because the chloric peroxide, being gaseous and unstable, disappears rapidly; secondly, because it is destroyed immediately in contact with organic matters, and so can not enter the stomach; thirdly, because the composition of water is improved in regard to the sulphur, nitrogen, and organic matter it contains; and fourthly, because a certain quantity of oxygen in solution renders it more limpid, lighter, and consequently more digestive.

To arrive at the above conclusions many tests are reported showing that using water strongly treated with chloric peroxide for artificial digestion, fermentation, and for aquariums containing fish and plants all the processes of nature proceed as well or better with this solution as with ordinary water.

Before this process was adopted for the city of Ostende, Brussels, a series of tests were made with favorable results. The following is from the report made on these experiments:

"The action of chloric peroxide is remarkably energetic. In spite of the brevity of its action (about fifteen seconds) the proportion of organic matter is reduced almost by half; and this mineralization of the organic material is most striking in the proportional diminution of nitrogen and of sulphur—in organic combination—with augmentation of the amounts of nitric and sulphuric acid. Besides all microscopic germs are killed."

It would thus seem from these data that the sterilization of water for alimentation by chloric peroxide is efficacious, is cheap for large or small quantities of water, and that by means of a comparatively simple apparatus the required chemical reactions are induced regularly, and without the danger of explosion feared by some. It also appears that water sterilized in this way and left several hours in open vessels, or cascaded a few minutes over a porous substance, such as coke, is sterile, but contains no sterilizing or poisonous substance, but that concentrated

solutions of this peroxide can be made and preserved in closed vessels a considerable time, to be used later in treating water found far from the sterilizing plant.

It would appear that the above method, together with that of the small portable apparatus, might be a valuable adjunct to army-camp equipment, replacing the expensive and cumbersome water boilers.

The second method of utilizing ozone as a sterilizing agent has had to contend with the following difficulties:

First. The necessity of obtaining a strong solution of ozone in air which alone is sterilizing. This has been done by a specially constructed ozonator employing currents of very high voltage.

Second. The slight solubility of ozone in water, making it necessary to submit the water in finely divided particles to the immediate contact with the gas to insure the sterilization. This has been done by means of a sterilizing column, loosely filled with porous stone, in which the water falls in a very fine rain, while the strongly ozonated air is aspirated upward from the bottom to the top.

The patented apparatus is thus described:

"The liquid at *a* (diagram 2) is forced by a centrifugal pump *b* to the summit *c* of the column *d*, whose interior arrangement has for ulterior object to divide the water into small particles upon which the ozone acts. A tank *g* receives the water, which taken up by an elevating pump *t* is discharged into the distributing reservoir.

"The ozonated air is drawn into the lower part of the sterilizing chamber (column) which it transverses from below upward.

"The circulation of the ozone is assured by a ventilator *m*, aspirating the atmospheric air to make it pass first into a desiccation *l*, into the ozonator *k* and finally into the column *d*."

The ventilator *m* has in the later models been replaced by an exhaust or pump placed at the top of the column, thus avoiding any condensation of the ozonated air.

"The desiccator is simply a cylinder containing concentrated sulphuric acid which absorbs the vapor contained in the air.

"The electric current necessary for the production of the effluvia is furnished by a transformer *t*, whose primary circuit (1) receives the current of a motor *n*, operated by the engine *v*, with its boiler.

"The secondary circuit (2) furnishes to the ozonator currents of a tension of about 40,000 volts.

"At *n* is placed upon the circuit of high tension, a deflagrator formed of two spheres between which plays an electric spark that is blown continually by means of a jet of compressed air or of steam."

An experimental plant was erected in 1898 at the waterworks at Emmerin (Lille), capable of sterilizing 5,000 cubic meters per twenty-four hours, and the municipality appointed later a commission consisting of Drs. Staes-Brame, Roux, and Calmette, and chemists Buisine and Bouriez to report upon the water of Emmerin both chemically and bacteriologically before and after treatment by this process. Their labors were continued during the months of December, 1898, and January, 1899, and in February a report was rendered giving the details of many experiments and observations which are detailed in another place:

* * * * * * *

Now as to cost of construction and operating.

For small plants, that is, under a daily output of 5,000 cubic meters, this process is expensive both for construction and supervision, as a

small plant requires an experienced electrician as much as a large one. For a plant of 5,000 cubic meters per twenty-four hours the cost of sterilizing the water is from $0.006 to $0.008 per meter, which includes interest on cost of plant (about $40,000), as well as running expenses. For a large plant of 100,000 cubic meters per twenty-four hours the original cost of installation (all parts in duplicate), would amount to about $160,000, but after this outlay the expense of operating would only amount to about $0.0008 to $0.0012 per cubic meter where coal is used to generate power, and where water power could be utilized the expense would be less than half the above. We add to this the interest on the original outlay for the plant and the cost per meter amounts to $0.002 to $0.004.

We thus see that the apparatus requires a considerable outlay of capital at the beginning and must be under the constant control of an electrician, but that in spite of this the proportionate expense is not high for large quantities of water, although always above that of the chloric peroxide process. It is not recommended commercially for small quantities of water, and the apparatus can not conveniently be made portable, as can the first process. However, it presents a means of sterilizing potable water in large quantities that is according to the best authority practically absolute, without the danger, real or imaginary, of adding chemically noxious substances to the water, as is urged by some against the method by chloric peroxide. And the two methods enable us to economically sterilize potable water in those cases where the sources can not be absolutely protected from pollution, and in hospitals, institutions and army camps where special precautions are necessary.

Respectfully,

S. B. GRUBBS.
Assistant Surgeon, U. S. M. H. S.

The SURGEON GENERAL,
U. S. Marine-Hospital Service.

[Translation.]

By P. A. Surg. H. D. Geddings, U. S. M. H. S.

THE INDUSTRIAL STERILIZATION OF POTABLE WATERS BY OZONE, BY MEANS OF THE APPARATUS AND PROCESSES OF MESSRS. MARMIER AND ABRAHAM.

LILLE, *February 12, 1900.*

A Report

presented to the Municipality of Lille, by the Scientific Commission appointed by the Municipal Administration, and composed of

Dr. Staes-Braeme, Adjunct to the Mayor, President.
Dr. Roux, Member of the Institute of France, Member of the Academy of Medicine, sub-Director of the Pasteur Institute.
Dr. Buisine, Professor of Industrial Chemistry of the Faculty of Sciences of Lille.
Dr. Calmette, director of the Pasteur Institute of Lille.
Professor of the Faculty of Medicine of Lille.
Dr. Bouriez, Chemical Expert.
(Dr. Calmette, Secretary of the Commission.)
February, 1899.

General considerations.

We know to-day that drinking water is very often the vehicle of infectious diseases, and since this has been proved, hygienists and engineers have diligently sought, availing themselves of the precise methods of experimental science, for means of eliminating, as completely as possible, the pathogenic microbes which are often contained in the water supplies of cities.

Numerous means have already been proposed for arriving at this end. They may be divided into two great categories:

1. Some propose to modify the methods of collecting the water from springs, water courses, or subterranean strata, in order to avoid as much as possible every cause of pollution by microbes coming from the surface of the soil.

2. Others have as their object the separation or destruction of the germs, whose presence is unavoidable in the waters which it is proposed to deliver for use.

Many cities are compelled to drink either water from sources which it is impossible to guard against numerous causes of contamination, or from sources collected superficially in cultivated soil and permeated by surface infiltration.

The city of Lille is found in this latter category. It possesses, in a vast plain which extends along the valley of the Deule, and especially in the neighborhood of the village of Emmerin, a series of springs which break out in the midst of marshes and cultivated lands.

The water-bearing stratum which feeds these springs has its origin in the chalk. Its moderate depth, the location of its points of emergence, and the methods of collection pursued are such that during the entire year the water contains numerous germs, which are derived from the surface of the cultivated soil.

These germs are especially abundant at the time of the great autumn rains. The determination of their species leaves no doubt of the constant danger which their ingestion may lead to. We can prove from time to time each year that numerous cases of typhoid fever exist among the inhabitants of the district of Lille, and it does not appear dubious that the very large infant mortality which is reported by the sanitary office under the heads of "gastro-intestinal affections and athrepsia" ought to be attributed in large part to the defective qualities of the water supply.

Justly impressed with this state of affairs and desirous of protecting the inhabitants as efficaciously as possible from the attacks of epidemic diseases, the municipal administration of Lille is endeavoring on the one hand to largely increase the present output of the springs at Emmerin, which have become insufficient owing to the steady increase of the population, and at the same time to insure the perfect wholesomeness of the water which is distributed.

Almost all methods of purification which have been proposed up to the present time have serious objections when it comes to a question of employing them on a large scale. Filters of porous earth, excellent for the filtration of the water of a household, when they are carefully watched, have too small an output and cost too much to be used for purifying the water of an entire city.

Filtration through beds of sand improves the water, but does not afford absolute safety.

Sterilization by heat is too costly to dream of applying it on a large scale, and among the procedures of chemical purification in the present

state of our knowledge on the subject, the only one which can be shown to be practically efficacious and commendable rests upon the employment of ozone.

We have for a long time known the energetic microbial and oxydizing properties of ozone. The application of this gas to the sterilization of potable waters has been proposed by several savants, notably by Messrs. Ohlmuller, Siemens, and Halske, of Berlin, in 1891; more recently by Messrs. Tindal, Schneller, and Van der Sleen, of Holland.

At the Paris Exposition of Hygiene, opened at the Champ de Mars in 1895, Mr. Tindal exhibited the first practical realization of an apparatus, permitting the efficient treatment of about 2 cubic meters of water per hour. However, the application of the system has not been effected, in a regular way, in any city, and the problem of the practical use of ozone for the purification of large quantities of potable water, remained *in statu quo*.

In 1895 Messrs. Marmier and Abraham undertook the study of this question, and we think that they have made decided advances. In February, 1898, these two scientists asked authority of the municipal administration to establish at the pumping station of the springs at Emmerin, a practical apparatus for the production of ozone, with a view of making a large experiment, which would render it possible to give a verdict upon the practical value of their procedure, and upon the apparatus of their invention.

The administration, thoroughly interested in this experiment, requested us to form a commission to test it, and to give our opinion upon the value of the process.

The commission, composed as previously indicated, met for the first time on December 10, 1898, at the Pasteur Institute of Lille, for the elaboration of a programme for these experiments.

This programme being arranged, the commission was divided into two sections; the one composed of Drs. Roux and Calmette was charged with the bacterial experimentation; the other composed of Messrs. Buisine and Bouriez was charged with the chemical study of the waters of Emmerin before and after the treatment by ozone.

According to the resolutions of the commission regular takings of samples of water, untreated and ozonized, were effected at Emmerin on December 10, 11, and 12, 1898, and on January 17, 24, 27, and 28, 1899, in order to take account of the value of the process in full, continuous, and normal operation.

Description of the apparatus.

The experiment of sterilizing the water was conducted in a small building adjacent to the pumping station of the city of Lille. The apparatus consists of three parts—

1. An apparatus for the production of an electric current.
2. An apparatus for the production of ozone.
3. An apparatus for the sterilization of water.

A.—*Production of the electric current.*

This part of the building contains a steam engine, which presents no peculiarities, and a dynamo. The current produced passes into a high potential transformer, which could give 40,000 volts and upward.

B.—*Production of the ozone.*

The production of the ozone in an uninterrupted fashion is assured by two apparatus, an ozonizer and a sparking machine. Between the poles of this sparker there plays a series of "potential sparks," one of the uses of which is to assure between the poles of the ozonizer, a regular potential. The ozonizer is constructed as follows: An electrode, a glass plate, an interval; a glass plate, an electrode, an interval; a glass plate, an electrode, an interval, etc. The electrodes are metallic, and each one presents two opposite plane surfaces. These surfaces are perfectly flat, and upon each of them is accurately placed the plate of glass. All the electrodes of the even series were joined to one pole of the transformer, all the electrodes of the uneven series to the other pole. Particular precautions have been taken to insure the perfect insulation of these two series of electrodes, for potentials much higher than those ordinarily employed.

In the intervals between the glass plates arises the gaseous body, of a beautiful violet color. Under its action the oxygen of the air is converted into ozone. By means of a special arrangement, air is not drawn from the apparatus until it has traversed a certain distance of ozonizing surface, arranged in advance. All portions of the air, therefore, are subjected to an equal ozonizing influence.

The electrodes are continuously cooled, both sets of electrodes at once. Insulation is, nevertheless, assured, and there is never a short circuit in the apparatus. This is conveniently arranged by passing the column of cooling water through two series of dropping apparatus.

C.—*Sterilization of the water.*

Flowing from the ozonizer the ozone is carried into a large column of masonry. In this column it comes into contact with the water to be sterilized. The sterilization is obtained by a systematic circulation of the ozone and the water. The water escapes at the bottom of the column and flows into the storage reservoirs of the city of Lille. A calibrated weir is put in the course of the exit stream to measure the output.

Bacteriological analysis.

The ozonizing apparatus were in continuous operation, during the day only, from the commencement of July. They were operated day and night during the 10th, 11th, and 12th of December. The normal output of the column was 35 cubic meters of water an hour. Samples of ozonized water intended for bacteriological analysis were collected at Emmerin in sterilized balloon pipettes, and at the same time samples of nontreated water.

On December 10, the untreated water was planted into 5 flasks in a quantity of one-tenth of a cubic centimeter for a preliminary experiment. At the end of from twenty-four to sixty hours all the flasks were altered.

Planted into nutrient gelatin in flat Erlenmeyer flasks, in quantities of from one-tenth to five-hundredths of a cubic centimeter the nontreated water gave after seven days 2,200 germs per cubic centimeter, of which 180 were of the liquefying species.

The ozonized water, after passage through the sterilizing column,

which contained ozone in a concentration of 0.0058 gram to the liter of air, gave the following results:

Bacteriological analysis of ozonized water collected at 10 a. m., December 11.

Output of the column, 35 cubic meters of water per hour. Concentration 0.0058 gram of ozone per liter of air. Temperature of the interior of the ozonizer, 20° C. Temperature of the exterior, 13° C.

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after 15 days in bouillon or 7 days in gelatin.	Species of germ observed.
		c. c.		
Neutral bouillon	10	0.5	0	
Do	5	1	1	B. subtilis.
Do	1	11	1	Do.
Do	1	12	0	
Do	2	13	0	
Nutrient gelatin	5	1	0	
Do	5	2	0	

Recapitulation.—Two germs of B. subtilis for the total quantity of 74 c. c. of water planted.

On December 11, at 5 p. m., new samples were collected at Emmerin of crude and ozonized water.

The ozonizing apparatus showed a concentration at this time of 0.0065 grams of ozone per liter of air, the output of the column remaining at 35 cubic meters per hour.

The crude water was kept twenty-four hours in the laboratory at a mean temperature of 18° C. Planted at noon of the 12th in gelatin it gave in seven days 3.960 germs per cubic centimeter, of which 340 were liquefying.

Ozonized water taken at 5 p. m., December 11.

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after 15 days in bouillon or 7 days in gelatin.	Species of germ observed.
		c. c.		
Neutral bouillon	10	1	0	
Do	5	0.5	0	
Do	5	1.3	1	B. subtil.
Do	3	4	0	
Nutrient gelatin	3	1.5	2	1 subtil. 1 mold.

Recapitulation.—Two germs of B. subtilis and 1 mold in a total quantity of 35.5 c. c. of ozonized water planted.

Second series of experiments made January 17 to 24.

On the morning of January 17, 1899, a sample of ozonized water was taken. (Concentration of ozone 0.006 grams per liter of air) the flask was kept in the laboratory for twenty-four hours before planting.

On January 24 a new sample was taken and was kept in the laboratory for thirty-six hours before planting.

The results were as follows:

1.—*Sample of ozonized water analyzed after twenty-four hours.*

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after fifteen days.
		c. c.	
Neutral bouillon	17	1.2	0

2.—*Ozonized water analyzed after thirty-six hours.*

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after fifteen days.
		c. c.	
Neutral bouillon	2	7	0
Do	1	13	0
Do	1	15	0

Recapitulation.—Ozonized water, left for twenty-four and thirty-six hours in the laboratory before planting, remained sterile.

On January 27 and 28 the commission made a last series of experiments upon 2 samples taken at intervals of twenty-four hours. The ozonizing apparatus was in continuous operation day and night. The output of the column was 35 cubic meters of water per hour, and the concentration of the ozone was 0.0093 grams of ozone per liter of air.

The crude water taken on the morning of the 27th, at the same time as the samples of ozonized water gave, after six days in gelatin, 1,170 germs per cubic centimeter.

A second sampling of the same water, taken on the morning of the 28th, gave 988 colonies per cubic centimeter.

A balloon pipette of ozonized water, taken on the morning of the 28th and submitted to analysis forty-eight hours afterwards, was thus examined on the morning of the 30th. The results of the analysis of samples of ozonized water taken on the 27th, 28th, and 30th, are given in the three following tables:

Ozonized water taken at Emmerin, 10 a. m., January 30.

Concentration, 0.0093 grams of ozone per liter of air. Output, 35 cubic meters of water per hour. Temperature in interior of ozonizer, 13° C.—Exterior.

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after 15 days in bouillon or 7 days in gelatin.	Species of germ observed.
		c. c.		
Neutral bouillon	20	1.2	0	
Do	4	3	0	
Do	4	3.5	0	
Do	5	4	0	
Do	2	12	1	B. subtilis.
Do	1	16	1	Do.
Nutrient gelatin	7	3	0	
Do	3	5	0	

Recapitulation.—One hundred and forty-six cubic centimeters of ozonized water, planted into 46 flasks, gave 2 germs of B. subtilis.

Ozonized water collected at Emmerin, 10 a. m., January 28.

Concentration, 0.0095 grams ozone per liter of air. Output of column, 35 cubic meters of water per hour. External temperature, 0° C.

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after 15 days in bouillon or 7 days in gelatin.	Species of germ observed.
		c. c.		
Neutral bouillon	11	1.4	0	B. subtilis.
Do	15	2.2	1	Do.
Do	2	13	1	Do.
Do	2	9	0	
Do	2	10	0	
Do	1	15	0	
Do	2	18	1	Do.
Do	1	25	1	Do.
Nutrient gelatin	6	2.2	0	

Recapitulation.—One hundred and ninety-two and six-tenths cubic centimeters of ozonized water, planted in 41 flasks, gave 4 germs of B. subtilis.

Ozonized water, collected at Emmerin, 10 a. m., January 28, analyzed January 30, after standing forty-eight hours in the laboratory at a temperature of 18° C.

Culture medium.	Number flasks planted.	Quantity water planted each flask.	Number germs after 15 days in bouillon or 7 days in gelatin.	Species of germ observed.
		c. c.		
Neutral bouillon	6	1	0	
Do	6	2	0	
Do	1	8	0	
Do	3	10	1	B. subtilis.
Do	1	11	0	
Do	1	12	1	Do.
Do	1	13	1	Do.
Do	3	14	1	Do.
Do	2	20	1	Do.

Recapitulation.—One hundred and seventy-five cubic centimeters of ozonize water, kept forty-eight hours in the laboratory gave 5 germs of B. subtilis, which were capable of resuscitation at 36° C.

In the presence of these excellent results, the commission has wished to take account of certain facts which have attracted their attention during the course of the experiments above detailed. It appeared extraordinary, for example, that the ozonized water kept in the laboratory for twelve, twenty-four, thirty-six, or even ninety-six hours, should remain sterile, and should be shown to be relatively poorer in germs than water analyzed a very short time after the taking of these samples.

One might suppose: Either that some germs of the B. subtilis which escaped the action of the ozone during its passage through the column, were destroyed by the very small quantity of ozone which might remain in the liquid during the hours immediately following the taking of the sample; or else that ozonization produces substances in the water which prevent the growth of these germs.

To answer these questions, we mixed with 373 c. c. of ozonized water, taken on January 23, and preserved three days in the laboratory, 68 c. c. of crude water taken on the 26th of the same month. The mixture was planted on the 28th, two days after mixing in the dose of one tenth of a cubic centimeter per flask of nutrient gelatin.

A count of the colonies, made six days after planting and growing at a temperature of 23° C., gave 1,340 germs per cubic centimeter. *Therefore the ozonized water contains no anticeptic substance capable of sterilizing the germs of crude water mixed with it, and thus preventing their growth.*

As we have constantly observed that the ozonized water is proportionately poorer in germs the longer the time after taking that the plantings have been made, we are obliged to conclude that, if the greater portion of the germs contained in the water are destroyed during its passage through the column, almost all of those which escape this phase of the operation succomb in the first few minutes after being led into the reservoirs, where the water coming from the apparatus is stored.

This fact is very interesting to note, because it shows that while the ozonized water may not contain more than traces of ozone, a few minutes after its passage from the apparatus, still the quantity is sufficient to prevent the growth of the B. subtilis which have escaped the sterilization.

Dr. Buisine, professor of industrial chemistry of the faculty of sciences of Lille, and Dr. Bouriez, an expert chemist, were detailed to make comparative analyses of the Emmerin water before and after the

ozone treatment, looking especially to the content of oxygen, organic matter, and nitrates.

It was necessary, in fact, to know if the treatment by ozone had not resulted in increasing to too great proportions the content of the water in nitrates, consequent upon the oxidation of the organic matter contained in the water. The following are the results:

	Crude water.	Ozonized water.
	Gram.	*Gram*
Organic matter (in terms of oxalic acid)	0.014	0.003
Organic matter (in terms of oxygen, process A. Levy)	0.00088	0.00080
Nitric acid (nitrate of potash, process Grandval-Lajoux)	0.034	0.030
Nitrous acid (metaphenylene-Diamine)	0.0005	0.003
Nitrous acid (Resorcin)	0.0005	0.003
Ammonia (process of Nessler)	0.00	0.00
Oxygen dissolved	0.0097	0.0098

To summarize.—The total of the experiments which we have made, bacteriological and chemical, extending from December 10 to February 12, 1899, lead us to conclude that—

1. The process of sterilization of drinking water by ozone, based upon the use of the ozonizing apparatus and sterilizing column of Messrs. Marmier and Abraham, is of incontestable efficiency, and this efficiency is superior to that of all means of sterilization as at present known, which can be applied to the purification of large quantities of water.

2. The very simple arrangement of the apparatus, their strength, the constancy of their output, and the regularity of their action, give all the guarantees which can be expected of a truly practical apparatus.

3. All pathogenic and saprophytic microbes which have been encountered in the waters examined by us are perfectly destroyed by passage through the ozonizing column. Only a few germs of the B. subtilis resist.

We note about one germ of this species for each 15 c.c. of water treated by means of a concentration of ozone equivalent to 6 milligrams per liter of air. With a concentration of 9 milligrams the proportion of germs of B. subtilis, revivifiable by a culture temperature in bouillon, is reduced to 1 germ for each 25 c. c. of water treated.

It is to be noted that the bacillus subtilis (Hay bacillus) is perfectly innocuous to man and animals, and germs of this microbe resist always the greater part of means of destruction, such as heating by steam under pressure at a temperature of 110° C. It is not essential then to require its disappearance in waters intended for drinking, and we consider as amply sufficient the sterilization obtained by a concentration of 5 to 6 milligrams of ozone per liter of air, under the conditions labored under by Messrs. Marmier and Abraham.

4. The ozonizing of the water adds to it nothing of a foreign nature prejudicial to health of the persons who may make use of it. On the contrary, on account of the nonincrease of the content of nitrates, and the considerable diminution of the content of organic matter, waters submitted to the treatment of ozone are less liable to subsequent pollutions, because less alterable in their characteristics. Finally, ozone being nothing more than a peculiar molecular condition of oxygen, the use of this body presents the advantage of energetically oxygenating the water, and rendering it more wholesome and more agreeable for use, and that without removing any of the useful mineral constituents.

5. In so far as concerns the city of Lille our opinion is that it is our duty to recommend to the municipal administration of the city the process of Messrs. Marmier and Abraham, as we have satisfied ourselves of the assured innocuousness and the security acquired by the waters of Emmerin, which are used by all the inhabitants of the province of Lille.

We think that having been given the security afforded by this method of purification the city of Lille would find it advantageous to immediately increase the output of the present springs by simply leading in the waters of the river, or streams of the neighborhood, roughly filtered by a dike of sand, these to be sterilized at the same time with the water of the springs by the ozonizing apparatus.

Whatever may be the depth to which will penetrate the subterranean galleries which are at present projected for a water supply in the neighborhood of Lille, we do not think it can be safely affirmed that the water collected will be safe from surface contamination by reason of the homogeneous nature of the soil alone.

The tunnels pierced into the chalk which supply the city of Rheims afford an example of this. The content of germs and organic matter which is there found varies to a large extent (from 2,000 to 5,000 germs and 12 to 40 milligrams of organic matter per liter), and typhoid fever makes frequent ravages in the population of the city. The collection of deep waters by means of deep borings only gives to hygienists, therefore, a slightly greater security than a surface collection.

We think, therefore, that in order to avoid the propagation of infectious diseases through the instrumentality of drinking water, the latter should be sterilized by an efficient process, such as that the results of which we have set forth in the above report.

By the Commission.

REPORTS FROM THE MEXICAN BORDER.

El Paso, Tex., October 20, 1900—Inspection service.—I have the honor to submit the following summary of work at this station the week ended October 20, 1900: Inspection of Mexican Central Railroad passenger trains, 140 persons; inspection of Rio Grande and Pacific Railroad passenger trains, 37 persons; disinfection of clothing, bedding, etc., of Mexican immigrants, 34 bundles; disinfection of hides imported from Mexico, 412; disinfection of soiled linen imported for laundry, 415. At the time Texas established its quarantine here against bubonic plague the Mexican Government instructed the Ciudad Juarez authorities to enforce a quarantine against San Francisco. Instructions have been received now from the Mexican Government to raise the quarantine.

E. ALEXANDER,
Acting Assistant Surgeon, U. S. M. H. S.

Another death from plague in San Francisco.

The Bureau has received the report of a death from plague in San Francisco which occurred October 14. The diagnosis was confirmed by bacteriologic examination and animal inoculations.

Vessels from West Indian ports inspected at Reedy Island Quarantine.

REEDY ISLAND QUARANTINE,
via Port Penn, Del., October 21, 1900.

SIR: I have the honor to report that the following vessels from Cuban, Mexican, and Central American ports were inspected at this station during the week ended October 20, 1900: October 16, 1900, steamship *Frey*, from Martinique via Santiago de Cuba, with ore; no passengers; Martinique bill of health signed by United States consul; Santiago bill of health signed by Assistant Surgeon Von Ezdorf.

Respectfully,
T. F. RICHARDSON,
Assistant Surgeon, U. S. M. H. S., In Command.

REEDY ISLAND QUARANTINE,
via Port Penn, Del., October 28, 1900.

SIR: I have the honor to report that the following vessels from Cuban, Mexican, and Central American ports were inspected at this quarantine during the week ended October 27, 1900: October 23, 1900, steamship *Orion*, from Havana, in ballast; no passengers; bill of health signed by Surgeon Glennan; detained to make full five days from port of departure; departed October 24, 4 p. m. October 27, 1900, steamship *Agnes*, from Baracoa, with fruit; no passengers. Bill of health signed by quarantine officer.

Respectfully,
T. F. RICHARDSON,
Assistant Surgeon, U. S. M. H. S., In Command.

Arrival at Baltimore of vessels from Central American and West Indian ports.

BALTIMORE, MD., *October 27, 1900.*

SIR: I have the honor to report the following-named vessels as having entered at this port during the week ended this day, from the ports named: German steamship *Polaria*, from Livingston, Guatemala, cargo in transit to Hamburg; British steamship *Grayfield*, from Santiago de Cuba, with iron ore.

Respectfully,
WM. F. STONE,
Collector.

Report of immigration at Baltimore for the week ended October 20, 1900.

OFFICE OF U. S. COMMISSIONER OF IMMIGRATION,
Port of Baltimore, October 20, 1900.

Number of alien immigrants who arrived at this port during the week ended October 20, 1900; also the names of vessels and ports from which they came.

Date.	Vessel.	Where from.	No. of immigrants.
Oct. 14	Steamship America	London	1
Oct. 15	Steamship Alfred Dumois	Port Antonio	1
Do	Steamship Oxus	do	1
Oct. 16	Steamship Mainz	Bremen	412
	Total		415

PERCY C. HENINGHAUSEN,
Commissioner.

Report of immigration at Boston for the week ended October 20, 1900.

OFFICE OF U. S. COMMISSIONER OF IMMIGRATION,
Port of Boston, October 21, 1900.

Number of alien immigrants who arrived at this port during the week ended October 20, 1900; also names of vessels and ports from which they came.

Date.	Vessel.	Where from.	No. of immigrants.
Oct. 14	Steamship Irishman	Liverpool, England	9
Do.	Steamship Ultonia	do	181
Do.	Steamship Prince Arthur	Yarmouth, Nova Scotia	183
Do.	Steamship Boston	do	151
Oct. 15	Steamship Admiral Farragut	Port Morant, Jamaica	5
Do.	Steamship Sagamore	Liverpool, England	14
Oct. 16	Steamship Bostonian	London, England	19
Do.	Steamship Florida	Halifax, Nova Scotia	69
Oct. 17	Steamship Lancastrian	Liverpool, England	16
Do.	Steamship Prince George	Yarmouth, Nova Scotia	95
Oct. 18	Steamship Saxonia	Liverpool, England	705
Do.	Steamship Boston	Yarmouth, Nova Scotia	84
Do.	Steamship Prince Arthur	do	78
Oct. 19	Steamship Halifax	Halifax, Nova Scotia	195
Oct. 20	Steamship Prince George	Yarmouth, Nova Scotia	99
	Total		1,903

GEORGE B. BILLINGS,
Commissioner.

Report of immigration at New York for the week ended October 20, 1900.

OFFICE OF U. S. COMMISSIONER OF IMMIGRATION,
Port of New York, October 23, 1900.

Number of alien immigrants who arrived at this port during the week ended October 20, 1900; also names of vessels and ports from which they came.

Date.	Vessel.	Where from.	No. of immigrants.
Oct. 14	Steamship Bonn	Bremen	653
Oct. 15	Steamship Cap Falo	Hamburg	226
Do.	Steamship La Lorraine	Havre	323
Oct. 16	Steamship Anchoria	Glasgow	92
Do.	Steamship Amsterdam	Rotterdam	385
Oct. 17	Steamship Alsatia	Genoa and Naples	661
Do.	Steamship Kensington	Antwerp	576
Oct. 18	Steamship Majestic	Liverpool and Queenstown	464
Oct. 19	Steamship Trojan Prince	Genoa and Naples	617
Do.	Steamship Aller	Bremen	442
Do.	Steamship Patricia	Hamburg	456
Oct. 20	Steamship Californian	Glasgow	15
Do.	Steamship St. Louis	Southampton	309
Do.	Steamship Werra	Genoa and Naples	720
	Total		5,939

THOMAS FITCHIE,
Commissioner.

Report of immigration at Philadelphia for the week ended October 27, 1900.

OFFICE OF U. S. COMMISSIONER OF IMMIGRATION,
Port of Philadelphia, October 27, 1900.

October 23, steamship *Belgenland*, from Liverpool and Queenstown, with 230 immigrants.

JNO. J. S. RODGERS, *Commissioner.*

Report of immigrants inspected at the port of San Francisco, Cal., during the month of September, 1900.

Total number of immigrants inspected, 351; number passed, 345; number certified for deportation on account of dangerous contagious or loathsome diseases, or for other physical causes, 6.

Disposition of immigrants certified for deportation.—Number cases pending at beginning of month, none; number cases certified for deportation during month, 6; total to be accounted for, 6; number cases deported, 3; number cases admitted, 2; number cases pending at close of month, 1.

J. J. KINYOUN,
Surgeon, U. S. M. H. S.

Statistical reports of States and cities of the United States—Yearly and monthly.

CONNECTICUT—*New Haven.*—Month of August, 1900. Estimated population, 108,000. Total number of deaths, 190, including diphtheria, 2; enteric fever, 4; scarlet fever, 1; whooping cough, 6, and 16 from phthisis pulmonalis.

Month of September, 1900. Estimated population, 108,000. Total number of deaths, 135, including enteric fever, 5; measles, 1, and 11 from phthisis pulmonalis.

MASSACHUSETTS—*Lawrence.*—Month of September, 1900. Census population of 1900, 62,559. Total number of deaths, 107, including diphtheria, 4; enteric fever, 2; whooping cough, 1, and 6 from tuberculosis.

MICHIGAN.—Reports to the State board of health, Lansing, for the week ended October 20, 1900, from 77 observers, indicate that smallpox and diphtheria were more prevalent, cholera infantum, cholera morbus, remittent fever and neuralgia less prevalent, and erysipelas, pleuritis and inflammation of bowels much less prevalent than in the preceding week.

Enteric fever was reported present at 197, phthisis pulmonalis at 187, scarlet fever at 69, diphtheria at 38, whooping cough at 12, measles at 9, smallpox at 8, and cerebro-spinal meningitis at 6 places.

MINNESOTA—*St. Paul.*—Month of September, 1900. Estimated population, 165,000. Total number of deaths, 144, including diphtheria, 3; enteric fever, 6, and 21 from tuberculosis.

OHIO—*Columbus.*—Month of September, 1900. Estimated population, 140,000. Total number of deaths, 187, including enteric fever, 3; whooping cough, 1, and 14 from tuberculosis.

RHODE ISLAND—*Newport.*—Month of September, 1900. Estimated population, 21,500. Total number of deaths, 30, including enteric fever, 2, and 4 from tuberculosis.

WASHINGTON—*Seattle.*—Month of September, 1900. Estimated population, 90,000. Total number of deaths, 50, including enteric fever, 3, and 3 from tuberculosis.

REPORTS FROM NATIONAL QUARANTINE

Number.	Name of station.	Week ended.	Name of vessel.	Date of arrival.	Port of departure.
	UNITED STATES:				
1	Alexandria, Va.	Oct. 27			
2	Beaufort, S. C.	do			
3	Brunswick, Ga.	Oct. 20	Ger. bk. Oldenburg (a)	Oct. 7	Maceo
			Br. bktn. Ethel Clarke	Oct. 15	Cienfuegos
			Nor. bk. Emilie Marie	Oct. 19	Liverpool
		Oct. 27	Nor. bk. Emilie Marie(a)	do	do
			Am. bg. John McDermott	Oct. 22	San Juan
4	Cape Charles, Va.	do	Br. ss. Almora	Oct. 25	Glasgow
			Am. ss. Orion	do	Havana
5	Cape Fear, N. C.	do			
6	Columbia River, Oreg.	Oct. 20			
7	Delaware Breakwater Quarantine, Lewes, Del.	Oct. 27			
8	Dutch Harbor, Alaska	Oct. 6			
		Oct. 13			
9	Eureka, Cal.	Oct. 20			
10	Grays Harbor, Wash.	do			
11	Gulf Quarantine, Ship Island, Miss.	Oct. 20	Ger. bk. Duncraig	Oct. 6	Pernambuco
			Am. sc. Flora Morang	Oct. 16	Colon
			Am. sc. Helen E. Kenney	Oct. 18	Martinique
12	Los Angeles, Cal.	Oct. 18			
13	Newbern, N. C.	Oct. 27			
14	Nome, Alaska	Sept. 29			
15	Pascagoula, Miss.	Oct. 27			
16	Port Angeles, Wash.	Oct. 13			
		Oct. 20			
17	Port Townsend, Wash.	do	U. S. Rev. cutter Rush	Oct. 15	Dutch Harbor
18	Reedy Island Quarantine, Del.	Oct. 27	Am. ss. Orion	Oct. 23	Havana
19	San Diego, Cal.	Oct. 20			
20	San Francisco, Cal.	do	Am. ss. City of Pekin	Oct. 18	Hongkong
21	San Pedro, Cal.	Oct. 18			
22	Savannah, Ga.	Oct. 20	Aus. brig Nicolleto	Oct. 14	Progreso
			Aus. bk. Olga T	Oct. 16	Pointe à Pitre
			Br. ship Harvest Queen	Oct. 20	Rio de Janeiro
23	South Atlantic Quarantine, Blackbeard Island, Ga.	do	Nor. bk. Bonheur	Oct. 19	Bahia
24	Tortugas Quarantine, Key West, Fla.	do			
25	Washington, N. C.	Oct. 27			
	CUBA:				
26	Caibarien	Oct. 20			
27	Cardenas	do			
28	Cienfuegos	do			
29	Daiquiri	Oct. 13			
30	Gibara	do			
31	Guantanamo	do			
32	Havana	Oct. 20	Sc. Dr. Lykes	Oct. 15	Key West
			Ss. Aransas	Oct. 17	do
			Sp. bk. Lorenzo	Oct. 18	Buenos Ayres
			Sc. Dr. Lykes	Oct. 20	Key West
33	Isabela de Sagua	do			
34	Manzanillo	Oct. 13			
35	Matanzas	Oct. 20			
36	Santiago de Cuba	Oct. 13	Br. ss. Grayfield	Oct. 9	Havana
	HAWAII:				
37	Hilo	Oct. 2			
38	Honolulu	Oct. 6			
39	Kahului	do			
40	Kihei	Sept. 30			

a Previously reported.

AND INSPECTION STATIONS.

Number.	Destination.	Treatment of vessel, passengers, and cargo.	Date of departure.	Remarks.	Vessels inspected and passed.
1				No transactions	
2				No report	
3	Brunswick	Disinfected and held.	Oct. 18		4
	do	do	Oct. 20		
	do	Held		1 seaman died on passage; cause unknown.	
	do	Disinfected and held	Oct. 23	1 case of sickness and 1 death at sea; cause unknown.	1
	do	do			
4	Newport News	do	Oct. 26		13
	Philadelphia	Disinfected and held 3 days			
5					3
6					3
7				One typhoid convalescent aboard the Nor. ss. Herman Wedel Jarlsberg, from Fernandina to Philadelphia.	5
8					3
					1
9				No transactions	
10					2
11	Ship Island	Disinfected and held	Oct. 17		3
	do	do			
	Pascagoula	do			
12					1
13				No transactions	
14				No report	
15					2
16				No report	
				No transactions	
17	Port Townsend	Passed on certificate of medical officer.	Oct. 15		18
18	Philadelphia	Inspected and detained to complete 5 days.	Oct. 24		20
19					4
20	San Francisco	Held for disinfection of baggage.	Oct. 18	43 oriental steerage and 101 oriental crew bathed and effects disinfected.	25
21				No transactions	
22	Savannah	Disinfected and held for observation.		Ballast removed	12
	do	Held for disinfection			
	do	do			
23	Sapelo	do		1 case typhus fever died in port of departure; 1 case beriberi in quarantine.	1
24				No report	
25				No transactions	
26					12
27					11
28					16
29					2
30				No report	
31					3
32	Key West	Partially disinfected	Oct. 15		28
	New Orleans	Disinfected	Oct. 18		
	Savannah	do	Oct. 19		
	Key West	Partially disinfected	Oct. 20		
33					11
34					9
35					5
36	Port in United States.	Held to complete period	Oct. 10		10
37					1
38					9
39					2
40				No transactions	

REPORTS FROM NATIONAL QUARANTINE

Number.	Name of station.	Week ended.	Name of vessel.	Date of arrival.	Port of departure.
	PHILIPPINES:				
41	Cebu	Sept. 1			
		Sept. 8			
42	Iloilo	do			
43	Manila	Sept. 15			
	PORTO RICO:				
44	Ponce	Oct. 13			
		Oct. 20			
45	San Juan	Oct. 13			
		Oct. 20	Sp. ss. Isla de Panay	Oct. 20	Havana
	Subports—				
46	Aguadilla	Oct. 13			
		Oct. 20			
47	Arecibo	Oct. 13			
		Oct. 20			
48	Arroyo	Oct. 13			
		Oct. 20			
49	Fajardo	Oct. 13			
		Oct. 20			
50	Humacao	Oct. 13			
		Oct. 20			
51	Mayaguez	Oct. 13			
		Oct. 20			

REPORTS FROM STATE AND

Number.	Name of station.	Week ended.	Name of vessel.	Date of arrival.	Port of departure.
1	Anclote, Fla	Oct. 27			
2	Baltimore, Md	do			
3	Bangor, Me	do			
4	Boston, Mass	do			
5	Carrabelle, Fla	do			
6	Cedar Keys, Fla	do			
7	Charleston, S. C	do			
8	Charlotte Harbor, Fla	do			
9	Elizabeth River, Va	do			
10	Galveston, Tex	do			
11	Gardiner, Oreg	do			
12	Key West, Fla	do			
13	Mayport, Fla	do			
14	Marcus Hook, Pa	do			
15	Mobile Bay, Ala	do			
16	New Bedford, Mass	do			
17	New Orleans, La	do			
18	Newport News, Va	do			
19	Newport, R. I	do			
20	New York, N. Y	do			
21	Pass Cavallo, Tex	do			
22	Pensacola, Fla	do			
23	Port Royal, N. C	do			
24	Providence, R. I	do			
25	Quintana, Tex	do			
26	Sabine Pass, Tex	Oct. 20	Bg. Tabob	Oct. 16	Tampico
27	St. Helena Entrance, S. C	Oct. 27			
28	Tampa Bay, Fla	do			

AND INSPECTION STATIONS—Continued.

Number.	Destination.	Treatment of vessel, passengers, and cargo.	Date of departure.	Remarks.	Vessels inspected and passed.
41					37
					40
42					13
43				1 of crew on Am. ss. San Pedro, from Tacloban, isolated for treatment and observation.	35
44					4
					4
45					2
	Las Palma	Held in quarantine; local baggage disinfected.	Oct. 21		2
46					1
				No transactions	
47					1
				No transactions	
48					1
				No transactions	
49					1
				No transactions	
50					1
				No transactions	
51					1
					2

MUNICIPAL QUARANTINE STATIONS.

Number.	Destination.	Treatment of vessel, passengers, and cargo.	Date of departure.	Remarks.	Vessels inspected and passed.
1				No report	
2				do	
3				do	
4				do	
5				do	
6				do	
7				No transactions	
8				No report	
9				do	
10				do	
11				do	
12				do	
13				do	
14				2 vessels spoken and passed; 1 case enteric fever on ss. Jarlsberg; 1 death on ss. Dolphin, from Port de Paix; cause, cerebral abscess. Body on board.	22
15				No report	
16				do	
17				do	
18				do	
19				do	
20				do	
21				do	
22				do	
23				do	
24				do	
25				do	
26	Sabine Pass			Disinfected and held	2
27				do	
28				do	

Smallpox and plague in the United States as reported to the Surgeon-General United States Marine-Hospital Service, June 29, 1900, to November 2, 1900.

[For reports received from December 29, 1899, to June 29, 1900, see PUBLIC HEALTH REPORTS for June 29, 1900.]

Places.	Date.	Cases.	Deaths.	Remarks.
Alabama:				
Mobile	Sept. 13	1		
Alaska:				
Cape Nome	June 14-Oct. 7	24	1	
Total for Territory		24	1	
California:				
Oakland	July 8-July 14	2		
Total for State, same period, 1899.		4	1	
Colorado:				
Arapahoe County	June 13-Oct. 13	59		
Boulder County	June 16	1		
Clear Creek County	July 2-Aug. 8	7		
Costilla County	Oct. 15	1		
Custer County	Oct. 5	1		
Eagle County	June 25-July 30	3		
El Paso County	June 21-Aug. 10	5		
Fremont County	Sept. 3-Sept. 23	6		
Garfield County	July 23-Sept. 12	25		
Gilpin County	Aug. 23	1		
Huerfano County	July 31-Sept. 24	11		
Jefferson County	July 27-Sept. 4	13		
Lake County	July 31-Aug. 23	1		
Larimer County	Apr. 25-Oct. 1	82		
Las Animas County	July 5-Oct. 2	23		
Otero County	Aug. 4-Sept. 18	5		
Ouray County	Oct. 9-Oct. 16	10		
Park County	July 3	2		
Pueblo County	July 7-Oct. 20	60		
Rio Grande County	Sept. 25-Oct. 14	5		
Routt County	June 25-July 30	2		
Wild County	Sept. 1-Sept. 30	2		
Total for State		325		
Total for State, same period, 1899.		7		
Delaware:				
Wilmington	July 1-July 7	1		
Total for State, same period, 1899.		0		
District of Columbia:				
Washington	June 18-July 23	24		
Total for District, same period, 1899.		0		
Florida:				
Jacksonville	July 1-July 7	1		
Madison County	Sept. 19	30		
Total for State		31		
Total for State, same period, 1899.		74		
Illinois:				
Cairo	Nov. 18, 1899-July 21, 1900.	117	6	
Chicago	June 24-July 14	4		
Total for State		121	6	
Total for State, same period, 1899.		4		
Indiana:				
Cass County	Sept. 1-Sept. 30	Several.	1	
Clarke County	June 1-June 30	3		
Clay County	do	1	1	
Clinton County	do	2		
Delaware County	Sept. 1-Sept. 30	14		
Evansville	July 1-July 7	1		
Frankton	July 1-July 31	4	1	
Gibson County	June 1-July 31	2		

Smallpox in the United States, etc.—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Indiana—*Continued.*				
Green County	June 1-July 31	14		
Jackson County	Aug. 21	1		
Jasper County	Sept. 1-Sept. 30	11		
Jay County	do	3		
Jennings County	do	1	1	
Johnson County	June 1-July 31	1		
Kirklin	July 1-July 31	2		
Keystone	do	1		
Hammond	do	1		
Lawrence County	June 1-July 31	9		
Loogootee	July 1-July 31	2	2	
Madison County:				
Alexandria	June 1-July 31	12	1	
Anderson	do	28		
Elwood	do	20		
Frankton	do	1		
Marion County:				
Indianapolis	do	3		
Irvington	do	9		
Miami County	Sept. 1-Sept. 30	1		
Michigan City	July 15-July 31	1		
Newton County	Sept. 1-Sept. 30	8		
Perry County	do	1		
Rockfield	July 1-July 31	1		
Monticello	do	1		
Starke County	June 1-June 30	3		
Sullivan County	Aug. 1-Sept. 30	1		
Warren County	do	1		
Wheeling	do	4		
Vandeburg County	do	2		
Total for State		170	7	
Total for State, same period, 1899.		55		
Iowa:				
Des Moines	June 1-Aug. 31	13		
Total for State, same period, 1899.		0		
Kansas:				
Cherokee County	Sept. 1-Sept. 30	3		
Crawford County	July 1-Sept. 30	15		Smallpox reported.
Douglas County	Sept. 1-Sept. 30	1		
Rawlins County	do	4		
Shawnee County	July 1-Sept. 30	7		
Sumner County	do	14		
Wichita	June 17-Oct. 6	30	1	
Total for State		74	1	
Total for State, same period, 1899.		16	1	
Kentucky:				
Covington	June 24-July 15	32		
Lexington	Oct. 7-Oct. 13	1		
Total for State		33		
Total for State, same period, 1899.		121		
Louisiana:				
Caddo	June 17-Aug. 4	11	0	
Caldwell	June 17-July 28	16	2	
New Orleans	June 17-Oct. 20	124	42	
Shreveport	June 17-Aug. 4	11	0	Nov. 28, 1899, to July 31, 303 cases, 30 deaths.
Total for State		162	44	
Total for State, same period, 1899.		18		
Maryland:				
Baltimore	June 24-Sept. 1	5		
Cumberland	June 17-July 7	8		
Total for State		13		
Total for State same period, 1899.		32		

Smallpox in the United States, etc.—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Massachusetts:				
Fall River	June 24-Sept. 15	9		
Lowell	July 15-Aug. 18	13		
Total for State		22		
Total for State, same period, 1899.		35	8	
Michigan:				
Delta County	Oct. 14-Oct. 20	1		
Houghton County	Aug. 12-Oct. 20	29		
Isabella County	July 29-Aug. 18	5		
Jackson	July 1-July 7	1		
Maple River Township	Oct. 14-Oct. 20	21		
Oscoda	July 3-July 9	1		
Wayne County	June 1-Aug. 4	6	1	
Total for State		64	1	
Total for State, same period, 1899.		11		
Minnesota:				
Akely	June 23-July 31	17		
Anoka	June 16-July 31	29		
Bertram County	June 23-July 31	6		
Carlton	June 16-July 31	2		
Carver County	June 23-Aug. 31	11		
Cass County	July 1-Aug. 31	21		
Duluth	June 16-Sept. 30	34		
Faribault County	Aug. 1-Aug. 31	1		
Goodhue County	July 1-July 31	4	1	
Hubbard County	Aug 1-Aug. 31	16		
Lake County	do	4		
Le Sueur County	June 23-Sept. 30	23		
Lincoln County	do	1		
Litchfield County	do	1		
Little Falls	July 1-July 31	18		
Martin County	Aug. 1-Aug. 31	1		
Minneapolis	June 16-Oct. 20	68		
Otter Tail County	July 1-Sept. 30	38	2	
Princeton	June 16-July 31	1		
Renville County	July 1-July 31	1		
Scott County	June 16-Aug. 31	44		
St. Paul	June 23-July 31	8		
Sherburne County	Aug. 1-Aug. 31	7		
Two Harbors	July 1-Sept. 30	7		
Traverse County	Aug. 1-Sept. 30	19		
Wabasha	do	8		
Winona	July 29-Sept. 30	17		
Winsted	July 1-Sept. 30	18		
Wodena County	July 29-Aug. 4	7		
Wright County	June 16-July 5	2		
Total for State		434	3	
Total for State, same period, 1899.		71		
Mississippi:				
Ocean Springs (vicinity)	July 19	11		
Total for State, same period, 1899.		23		
Montana:				
Butte	July 17-Sept. 20	25	0	
Total for State, same period, 1899:		8	1	
Nebraska:				
Omaha	June 24-Oct. 6	7		
Total for State, same period, 1899.		0		
New Hampshire:				
Manchester	June 17-Aug. 20	13		
Total for State, same period, 1899.		0		

Smallpox in United States, etc.—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
New Jersey:				
Jersey City	June 18–June 24	1		
Newark	June 17–June 23	4		
Total for State		5		
Total for State, same period, 1899.		0		
New York:				
New York	June 17–Aug. 25	7	2	
Total for State, same period, 1899.		7		
North Carolina:				
Charlotte	June 1–July 31	11		
Wilmington	do	8		
Alamance County	May 1–Aug. 31	2		
Buncombe County	do	5		
Burke County	do	22		
Cabarrus County	do	5		
Caswell County	do	19		
Chatham County	do	1		
Cherokee County	do	2		
Cleveland County	do	5		
Craven County	do	26		
Davidson County	do	9		
Davie County	do	9		
Durham County	do	11		
Edgecombe County	do	2		
Forsyth County	do	18		
Franklin County	do		Many.	
Gates County	do	1		
Granville County	do	25		
Guilford County	do	22		
Halifax County	do	1		
Harnett County	do	8		
Haywood County	do	5		
Henderson County	do	4		
Hertford County	do	2		
Iredell County	do	5		
Johnston County	do	17		
Lenoir County	Aug. 1–Aug. 31	1		
Mecklenburg County	May 1–Aug. 31	35		
Moore County	do	14		
Nash County	do	12		
New Hanover County	do	7		
Orange County	do	7		
Person County	do	4		
Randolph County	do	13		
Rockingham County	do	153		
Rutherford County	do		A few.	
Vance County	Aug. 1–Aug. 31			Several cases.
Total for State		491		
Total for State, same period, 1899.		105		
North Dakota:				
Rolla	Aug. 1–Aug. 13	16	2	
Total for State, same period, 1899.		0	0	
Ohio:				
Cincinnati	June 16–Sept. 21	31		
Portsmouth	June 24–Sept. 15	14		
Youngstown	Jan. 1–June 30	13		
Allen County—				
Shawnee Township	do	7		
Ashtabula County	do	48		
Auglaize County	do	10		
Brown County	do	4		
Butler County	do	4		
Clark County	do	5		
Clinton County—				
New Vienna	do	1		
Columbiana County—				
Wellsville	do	19	2	
Coshocton County—				
Clark Township	do	2		
Cuyahoga County—				
Berea	do	5		
Brooklyn Township	do	2		
Cleveland	Jan. 1–Oct. 27	621	5	
Dover Township	Jan. 1–June 30	1		

Smallpox in United States, etc.—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Ohio—*Continued.*				
Cuyahoga County—*Cont'd.*				
East Cleveland	Jan. 1–June 30	3		
Glenville	do	4		
Mayfield Township	do	14		
Newburgh	do	30		
Lakewood	do	2		
Rockport	do	2		
West Park Township	do	1		
Darke County	do	12		
Defiance County—				
Highland Township	do	8		
Delaware County	do	44		
Franklin County—				
Columbus	do	39		
Fulton County—				
Wauseon	do	2		
Geauga County—				
Burton	do	3		
Greene County—				
Cedarville	do	20	2	
Hamilton County—				
Cincinnati	do	99	1	
Hyde Park	do	1		
Hancock County—				
Findlay	do	1		
Hardin County—				
McGuffey	do	3		
Henry County	do	120	3	
Huron County—				
Bellevue	do	9		
Lake County	do	2		
Licking County	do	2		
Lorain County	do	98	2	
Lucas County—				
Toledo	do	3		
Madison County	do	52		
Medina County—				
Lodi	do	2		
Mercer County	do	28		
Montgomery County—				
Dayton	Jan. 1–Sept. 8	9		
Morrow County	Jan. 1–June 30	4		
Pike County—				
Waverly	do	2		
Portage County—				
Kent	do	1		
Putnam County	do	6		
Ross County—				
Kingston	do	1		
Scioto County—				
Portsmouth	do	1		
Stark County	do	26	1	
Summit County—				
Akron	do	1		
Trumbull County	do	20	1	
Tuscarawas County—				
Dennison	do	1		
Union County—				
Jerome Township	do	2		
Washington County—				
Marietta	do	1		
Wayne County—				
Salt Creek Township	do	3		
Total for State		1,469	17	
Total for State, same period, 1899.		55		
Pennsylvania:				
Philadelphia	June 24–Oct. 20	13		
Pittsburg	June 17–July 7	5		
Total for State		18		
Total for State, same period, 1899.		226		
South Carolina:				
Greenville	July 8–July 14	1		
Total for State, same period, 1899.		0		
Texas:				
Beaumont	Feb. 1–June 1	107	0	
Carrizo	July 9	1		

Smallpox in United States, etc.—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Texas—*Continued.*				
Eagle Pass	Sept. 7	1		
Fort Bend County	Aug. 1, 1899, to Aug. 1, 1900.	156	2	
Robertson County	June 16	300	2	
San Antonio	June 1-June 30	1		
Total for State		566	4	
Total for State, same period, 1899.		188	5	
Utah:				
Ogden	June 24-Sept. 30	10	1	
Salt Lake City	July 1-Oct. 20	51		Dec. 13, 1899, to Aug. 1, 1900, 106 cases; deaths, 0.
Total for State		61	1	
Total for State, same period, 1899.		0		
Vermont:				
Caledonia County	Aug. 7	20		
Franklin County	do	2		
Orleans County	do	6		
Total for State		28		
Total for State, same period, 1899.		0		
Virginia:				
Petersburg	June 1-Aug. 26	4	0	
Roanoke	June 1-Aug. 31	23	1	
Total for State		27	1	
Total for State, same period, 1899.		156	2	
Washington:				
Lewis County	June 26	2		
Puyallup County	Sept. 6			Several cases.
Seattle	June 24-Sept. 30	36		
Tacoma	Aug. 5-Oct. 15	5		
Total for State		43		
Total for State, same period, 1899.		37		
West Virginia:				
Wheeling	Sept. 2-Oct. 6	2		
Total for State, same period, 1899.		2		
Wisconsin:				
Sixteen places	May 1-May 31	122	3	
Ten places	June 1-June 30	29	1	
Eight places	July 1-July 31	26	0	
Six places	Aug. 1-Aug. 31	45	0	
Ashland, Bayfield, Dane, and Eau Claire counties	Sept. 1-Sept. 18	75	0	
Total for State		297	4	
Total for State, same period, 1899.		0		
Wyoming	Oct. 2	1		
Grand total		4,602	94	
Grand total, same period, 1899.		1,254	18	

PLAGUE.

California:				
San Francisco	Mar. 7-July 6	13	11	
Do	July 7	1	1	
Do	July 8-Aug. 12	1	1	
Do	Aug. 13-Aug. 18	1	1	
Do	Aug. 19-Oct. 5	1	1	
Do	Oct. 6-Oct. 10	1	1	
Do	Oct. 14	1	1	

WEEKLY MORTALITY TABLE, CITIES OF THE UNITED STATES.

Cities.	Week ended.	Population, U. S. census of 1890.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Yellow fever.	Smallpox.	Varioloid.	Cholera.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Allegheny City, Pa	Oct. 27	a 129,000	34	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....
Ashtabula, Ohio	....do....	8,338	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore, Md	....do....	434,439	175	20	.....	.....	.....	.....	.....	6	.....	7	.....	.....
Biloxi, Miss	Oct. 20	3,234	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Binghamton, N. Y	Oct. 27	a 39,647	16	2	.....	.....	.....	.....	.....	1	.....	2	.....	.....
Boston, Mass	Oct. 20	a 560,892	200	24	.....	.....	.....	.....	.....	2	.....	12	1	1
Do	Oct. 27	a 560,892	214	27	.....	.....	.....	.....	.....	4	3	11	.....	3
Bristol, R. I	Oct. 20	5,478	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambridge, Mass	....do....	a 91,886	27	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
Do	Oct. 27	91,886	25	3	.....	.....	.....	.....	.....	.....	.....	4	.....	.....
Camden, N. J	..... do....	58,313	26	.....	.....	.....	.....	.....	.....	.....	1	5	.....	.....
Chelsea, Mass	Oct. 20	a 34,072	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chicago, Ill	Oct. 27	a 1,698,575	396	41	.....	.....	.....	.....	.....	10	3	18	.....	4
Chicopee, Mass	....do....	14,050	6	1	.....	.....	.....	.....	.....	1	.....	1	.....	.....
Cincinnati, Ohio	Oct. 26	296,908	81	8	.....	.....	.....	.....	.....	3	.....	2	.....	.....
Cleveland, Ohio	Oct. 27	a 381,786	106	.....	.....	.....	.....	.....	.....	3	2	6	.....	1
Clinton, Mass	Oct. 20	10,424	7	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Do	Oct. 27	10,424	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Concord, N. H	Oct. 20	a 19,000	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 27	a 19,000	7	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Cumberland, Md	Oct. 20	12,729	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dayton, Ohio	Oct. 27	a 85,333	25	4	.....	.....	.....	.....	.....	.....	.....	5	.....	.....
Detroit, Mich	....do....	a 286,000	85	2	.....	.....	.....	.....	.....	1	.....	2	.....	.....
Dunkirk, N. Y	Oct. 20	9,416	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elmira, N. Y	....do....	a 35,672	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Everett, Mass	....do....	11,068	5	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Fall River, Mass	Oct. 27	74,398	34	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fitchburg, Mass	Oct. 20	a 31,531	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gloucester, Mass	..... do....	24,651	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 27	24,651	7	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Grand Rapids, Mich	Oct. 20	60,278	24	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Green Bay, Wis	Oct. 21	9,069	8	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 28	9,069	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greenville, S. C	Oct. 20	8,607	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haverhill, Mass	Oct. 27	a 37,172	12	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holyoke, Mass	Oct. 21	35,637	10	2	.....	.....	.....	.....	.....	.....	1	2	.....	.....
Jacksonville, Fla	Oct. 20	17,201	25	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jersey City, N. J	Oct. 21	163,003	58	5	.....	.....	.....	.....	.....	.....	.....	3	.....	1
Johnstown, Pa	Oct. 27	21,805	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lawrence, Mass	Oct. 20	44,654	19	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lexington, Ky	....do....	21,567	8	2	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Do	....do....	21,567	10	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Los Angeles, Cal	....do....	a 102,479	36	8	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Lowell, Mass	Oct. 27	a 91,969	37	4	.....	.....	.....	.....	.....	2	.....	1	.....	.....
Lynchburg, Va	....do....	19,709	11	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
McKeesport, Pa	Oct. 20	a 21,700	14	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Do	Oct. 27	a 21,700	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malden, Mass	Oct. 20	a 33,664	8	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Do	Oct. 27	a 33,664	9	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manchester, N. H	..... do....	44,126	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massillon, Ohio	Oct. 20	10,092	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Medford, Mass	Oct. 27	11,079	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Melrose, Mass	Oct. 20	a 8,519	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Memphis, Tenn	Oct. 27	a 102,320	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michigan City, Ind	Oct. 21	a 15,000	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 29	a 15,000	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milwaukee, Wis	Oct. 27	a 285,315	59	3	.....	.....	.....	.....	.....	1	.....	6	.....	1
Minneapolis, Minn	Oct. 20	a 202,718	40	3	.....	.....	.....	.....	.....	1	.....	2	.....	.....
Mobile, Ala	Oct. 27	a 38,469	34	2	.....	.....	.....	.....	.....	3	1	.....	.....	.....
Nashville, Tenn	....do....	76,168	34	3	.....	.....	.....	.....	.....	2	.....	1	.....	.....
New Bedford, Mass	..... do....	40,733	22	.....	.....	.....	.....	.....	.....	3	1	1	.....	1
Newburyport, Mass	Oct. 20	13,947	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Orleans, La	....do....	242,039	121	.....	.....	.....	.....	.....	.....	4	.....	2	.....	.....
Newton, Mass	Oct. 27	a 33,587	8	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
New York, N. Y	....do....	a 3,437,202	1,208	160	.....	.....	.....	.....	.....	32	5	37	4	8
North Adams, Mass	....do....	a 24,200	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oakland, Cal	Oct. 13	48,682	21	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 20	48,682	27	4	.....	.....	.....	.....	.....	1	1	1	.....	.....
Omaha, Nebr	....do....	a 102,555	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 27	a 102,555	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palmer, Mass	....do....	6,520	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia, Pa	....do....	a 1,293,697	396	46	.....	.....	.....	.....	.....	7	1	14	.....	.....
Pittsburg, Pa	Oct. 20	a 321,616	95	8	.....	.....	.....	.....	.....	3	1	3	.....	1
Do	Oct. 27	a 321,616	91	11	.....	.....	.....	.....	.....	5	1	3	1	3

a United States Census of 1900.

WEEKLY MORTALITY TABLE, CITIES OF THE UNITED STATES—Cont'd.

Cities.	Week ended.	Population U. S. census of 1890.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Yellow fever.	Smallpox.	Varioloid.	Cholera.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Pittston, Pa.	Oct. 27	10,302	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plainfield, N. J.	....do....	11,267	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portland, Me	Oct. 20	36,425	13	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Do	Oct. 27	36,425	21	2	.....	.....	.....	.....	.....	1	.....	.....	.....	2
Portsmouth, Ohio	Oct. 20	12,394	5	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Do	Oct. 27	12,394	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Reading, Pa.	Oct. 29	a 78,961	29	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Salem, Mass.	Oct. 20	a 35,956	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salt Lake City, Utah	....do....	a 53,531	13	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scranton, Pa.	Oct. 13	75,215	32	.....	.....	.....	.....	.....	.....	1	.....	1	.....	1
Do	Oct. 20	75,215	22	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
Shreveport, La.	Oct. 27	11,979	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Somerville, Mass.	..... do	a 61,343	15	3	.....	.....	.....	.....	.....	1	.....	1	.....	.....
Steelton, Pa.	....do....	12,000	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tacoma, Wash.	Oct. 20	36,006	7	2	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Waltham, Mass.	....do....	18,707	8	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Warren, Ohio	....do. ...	5,973	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 27	5,973	3	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Washington, D. C.	Oct. 20	a 278,577	122	17	.....	.....	.....	.....	.....	5	.....	1	.....	4
West Tampa, Fla.	....do....	4,000	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheeling, W. Va.	....do....	34,522	10	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wichita, Kans	Oct. 27	32,853	10	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Williamsport, Pa.	....do....	27,132	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winona, Minn.	Oct. 20	18,208	8	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Worcester, Mass.	Oct. 19	a 118,421	37	6	.....	.....	.....	.....	.....	2	.....	1	.....	.....
Do	Oct. 26	a 118,421	44	7	.....	.....	.....	.....	.....	.....	2	2	.....	.....
Youngstown, Ohio	Oct. 27	a 34,885	12	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....

a United States Census of 1900.

Table of temperature and rainfall, week ended October 22, 1900.

[Received from Department of Agriculture, Weather Bureau.]

Locality.	Temperature in degrees Fahrenheit.			Rainfall in inches and hundredths.		
	Normal.	a Excess.	a Defic'ncy.	Normal.	Excess.	Deficiency.
Atlantic Coast:						
Eastport, Me	46		4	.95		.81
Portland, Me	48		1	.91		.88
Northfield, Vt	42		1	.49		.36
Boston, Mass	51		1	.98		.94
New Haven, Conn	52		3	.91		.88
Albany, N. Y	50		2	.70		.67
New York, N. Y	55		1	.77		.75
Harrisburg, Pa	51	1		.70		.70
Philadelphia, Pa	55		1	.63		.58
New Brunswick, N. J	53		3	.77		.74
Atlantic City, N. J	56		3	.71		.70
Baltimore, Md	57			.63		
Washington, D. C	56		2	.70		.70
Lynchburg, Va	57		1	.71		.71
Cape Henry, Va	60	1		.84		.84
Norfolk, Va	60	0		.84		.84
Charlotte, N. C	59	2		.84		.84
Raleigh, N. C	58	2		.81		.81
Kittyhawk, N. C	63	0		.78		.78
Hatteras, N. C	64	0		1.37		1.37
Wilmington, N. C	63	0		.73		.72
Columbia, S. C	63	0		.52		.50
Charleston, S. C	66	1		.87		.18
Augusta, Ga	63	2		.56		.56
Savannah, Ga	65	3		.75		.55
Jacksonville, Fla	69	4		1.17		1.04
Jupiter, Fla	75	4		2.04	1.72	
Key West, Fla	78	3		1.07		.65
Gulf States:						
Atlanta, Ga	61	4		.41		.15
Tampa, Fla	73	4		.46		.45
Pensacola, Fla	69	4		.70	2.66	
Mobile, Ala	66	5		.74		.74
Montgomery, Ala	64	6		.52	.46	
Meridian, Miss	61	7		.23	.18	
Vicksburg, Miss	65	2		.57	1.37	
New Orleans, La	69	4		.64	.64	
Shreveport, La	63	4		.65	.51	
Fort Smith, Ark	61	3		.58	.88	
Little Rock, Ark	61	3		.54	.42	
Palestine, Tex	66	0		.70	.59	
Galveston, Tex	71	3		.84	.17	
San Antonio, Tex	67	2		.30	.92	
Corpus Christi, Tex	73	2		.39	.07	
Ohio Valley and Tennessee:						
Memphis, Tenn	61	4		.59	.85	
Nashville, Tenn	59	5		.49		.48
Chattanooga, Tenn	60	5		.56		.09
Knoxville, Tenn	56	5		.63		.46
Lexington, Ky	55	5		.49		.47
Louisville, Ky	57	3		.65		.65
Indianapolis, Ind	53	5		.63		.63
Cincinnati, Ohio	56	3		.56		.53
Columbus, Ohio	53	2		.59		.53
Parkersburg, W. Va	52	3		.70		.70
Pittsburg, Pa	54	1		.51		.51
Lake Region:						
Oswego, N. Y	49		1	.77		.66
Rochester, N. Y	49	1		.67		.56
Buffalo, N. Y	50	1		.84		.82
Erie, Pa	52	1		.91		.88
Cleveland, Ohio	52	3		.63		.63
Sandusky, Ohio	52	5		.63		.62
Toledo, Ohio	51	3		.56		.50
Detroit, Mich	50	3		.56		.51
Lansing, Mich	49	3		.56		.50
Port Huron, Mich	48	3		.63		.45
Alpena, Mich	45	6		.84		.72
Sault Ste. Marie, Mich	41	8		.77		.53
Marquette, Mich	45	8		.70		.63
Escanaba, Mich	44	8		.76		.70
Green Bay, Wis	46	9		.53		.39
Grand Haven, Mich	48	5		.70		.43
Milwaukee, Wis	48	7		.51		.45
Chicago, Ill	51	7		.63		.63
Duluth, Minn	44	10		.56		.55

a The figures in this column represent the average daily departure.

Table of temperature and rainfall, week ended October 22, 1900—Continued.

Locality.	Temprature in degrees Fahrenheit.			Rainfall in inches and hundredths.		
	Normal.	a Excess.	a Defic'ncy.	Normal.	Excess.	Deficiency.
Upper Mississippi Valley:						
St. Paul, Minn.	46	12		.38	.10	
La Crosse, Wis.	48	11		.42		.31
Dubuque, Iowa	49	9		.56		.19
Davenport, Iowa	51	7		.56		.04
Des Moines, Iowa	50	9		.70		.56
Keokuk, Iowa	53	6		.63	.19	
Springfield, Ill.	53	5		.56	.54	
Cairo, Ill.	58	3		.61	.19	
St. Louis, Mo.	56	5		.63		.01
Missouri Valley:						
Columbia, Mo.	56	0		.24	.74	
Springfield, Mo	56	2		.56	1.04	
Kansas City, Mo.	54	6		.77		.26
Topeka, Kans.	56	3		.39	.23	
Wichita, Kans	58	1		.38	2.01	
Concordia, Kans.	54	4		.34	1.31	
Lincoln, Nebr.	53	6		.42	.43	
Omaha, Nebr.	52	5		.55	1.29	
Sioux City, Iowa	53	5		.42	.23	
Yankton, S. Dak.	48	11		.28	1.14	
Valentine, Nebr.	48	8		.21		.17
Huron, S. Dak.	44	11		.28	.18	
Pierre, S. Dak.	48	9		.14		.14
Moorhead, Minn.	41	13		.44	.68	
Bismarck, N. Dak.	43	10		.21		.20
Williston, N. Dak.	41	13		.21		.21
Rocky Mountain Region:						
Havre, Mont.	41	15		.14		.14
Helena, Mont.	44	10		.21		.11
Miles City, Mont.	45			.21		
Rapid City, S. Dak.	47	10		.14		.12
Spokane, Wash.	46	7		.35	.12	
Walla Walla, Wash.	52	7		.40	.41	
Baker City, Oreg.	47	5		.28	.53	
Winnemucca, Nev.	48	6		.10		.01
Pocatello, Idaho.	47	5		.25	.27	
Boise, Idaho.	50	10		.21	.55	
Salt Lake City, Utah	51	4		.35	.18	
Lander, Wyo.	42	7		.21		.21
Cheyenne, Wyo.	43	5		.14		.13
North Platte, Nebr.	48	10		.21		.07
Denver, Colo.	49	5		.21		.18
Pueblo, Colo.	52	2		.19	.02	
Dodge City, Kans.	53	4		.28	.30	
Oklahoma, Okla.	61		2	.31	1.11	
Amarillo, Tex.	55	0		.31	.66	
Abilene, Tex.	64	0		.51	3.78	
Santa Fe, N. Mex.	48		2	.21	.71	
El Paso, Tex.	61	1		.21	.88	
Phœnix, Ariz.	69	3		.14		.14
Yuma, Ariz.	71	3		.07		.07
Pacific Coast:						
Seattle, Wash.	51	4		.81	1.11	
Tacoma, Wash.	50	4		.96	1.67	
Portland, Oreg.	53	3		.97	.22	
Roseburg, Oreg.	52	5		.65	1.08	
Eureka, Cal.	52	5		.58	1.91	
Redbluff, Cal.	63		0	.31	.65	
Carson City, Nev.	49	5		.07	.10	
Sacramento, Cal.	61	2		.21	.13	
San Francisco, Cal.	60		1	.28	.01	
Fresno, Cal.	63	3		.14		.13
San Luis Obispo, Cal.	62	3		.21	.41	
Los Angeles, Cal.	64	1		.19		.18
San Diego, Cal.	63		1	.12	.08	

a The figures in this column represent the average daily departure.

FOREIGN AND INSULAR

AUSTRALIA.

End of plague in Adelaide—Total cases and deaths.

FREMANTLE, WEST AUSTRALIA, *August 29, 1900.*

SIR: I beg to hand you herewith statement, for the week ended August 11, issued by the medical board in connection with the bubonic plague in this colony.

Respectfully,

A. D. ALLAN,
Consular Agent.

Hon. JOHN P. BRAY,
United States Consul-General, Melbourne.

[Inclosure.]

BUBONIC PLAGUE.

PERTH, *August 13, 1900.*

Bulletin for week ended Saturday, August 11, 1900.

Remaining under treatment	1	Died during week	0
Admitted during week	0	Remaining under treatment	0
Discharged recovered	1		

Total from April 7 to August 11, 1900.

Total cases	6	Total contacts isolated	57
Total deaths	3	Total contacts remaining	0
Total discharged recovered	3	Total cases among contacts	0

NOTE.—This colony being now free from plague no further bulletins will be issued unless a fresh outbreak occurs.

J. WEST BLACK.

AUSTRIA.

Plague information from various countries from official sources at Vienna.

VIENNA, AUSTRIA, *October 15, 1900.*

SIR: I have the honor to submit the inclosed miscellaneous information of the march of the plague and the measures taken by various countries to prevent its spread.

Respectfully,

M. J. ROSENAU,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Inclosure.]

GREECE.—According to the royal decree of September 5 (18), the regulations of August 11 (24), have been changed, so that vessels from Constantinople are now permitted to enter any harbor having a sanitary physician and a lazaretto; and such vessels may be admitted to free pratique after a careful medical examination.

* * * * * * *

ROUMANIA.—Arrivals from Glasgow must pass a quarantine of six instead of ten days, under medical observation.

TURKEY.—According to the decision of the sanitary council, all arrivals from Alexandria must pass a forty-eight-hour quarantine under observation, and with disinfection, instead of a ten-day quarantine.

The quarantine against Port Said has been raised, and arrivals from there are now subject only to a medical examination.

EGYPT.—No cases of plague have occurred in Alexandria since September 21.

The maratime and quarantine council decided to establish a sanitary treatment of all vessels leaving Alexandria and to give them a clean bill of health.

Since May 16 there were 34 cases of plague in Alexandria (25 natives and 9 Europeans); of these 23 cases ended fatally (19 natives and 4 Europeans).

* * * * * * *

BRITISH HONDURAS.

Report from Belize—Fruit port.

BELIZE, BRITISH HONDURAS, *October 19, 1900.*

SIR: I have the honor to inclose the weekly reports of the registrar-general. The striking feature of these reports of late has been the large infantile fatality. The steamship *Capella*, of the Harrison Line, Williams, master, cleared for New Orleans via Vera Cruz on October 16; 32 in crew; cargo, general merchandise; 2 passengers from this place to Mexico, none to the States. The *Stillwater*, Galt, clears for New Orleans this a. m.; 32 in crew; 15 passengers, 1 from Belize, 14 in transit; cargo, mail and fruit.

Respectfully,

NORWOOD K. VANCE,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Inclosure.]

List of deaths registered in the town of Belize from the 12th instant to date.

BELIZE, *October 8, 1900.*

Certified by medical practitioner—		Certified by district commissioner or police, natural causes	1
Entero-colitis (*a*)	1	Certified by coroner	0
Post partum-hæmorrhage	1	Uncertified	0
Tetanus (*a*)	1		
Valvular diseases of heart	1	Total	5

a Under 6 years of age.

A. K. YOUNG,
Registrar-General.

CHINA.

Plague in Hongkong September 2 to 8, 1900.

MANILA, P. I., *September 20, 1900.*

SIR: I have the honor to inform you that during the week ended September 8, 1900, there occurred only 4 cases of plague in Hongkong, all resulting in death.

Respectfully,

J. C. PERRY,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

COLOMBIA.

Report from Bocas del Toro—Fruit port.

BOCAS DEL TORO, COLOMBIA, *October 14, 1900.*

SIR: I have the honor to report that for the week ended October 13, 1900, the following-named ships were inspected, clearing for ports in the United States: October 9, steamship *Brookline*, British; List, master; crew, 32; no passengers; for Baltimore, Md. October 10, steamship *Yumuri*, Norwegian; Boe, master; crew, 16; no passengers; for Mobile, Ala. October 13, steamship *George Dumois*, Norwegian; Jentoft, master; crew, 17; no passengers; from Coclo, Colombia, via Bocas del Toro, Colombia, for Mobile, Ala.

The general health of Bocas del Toro, and the adjacent cays, continues, as to the community at large, to remain satisfactory; malarial fever is still prevalent, but it is not of an aggravated or pernicious type, and can not be regarded with any degree of suspicion as being contagious or infectious.

All cases of fever are closely observed, and any deviation in their usual course would be promptly noted.

There has not been a death in the town of Bocas del Toro during the past week, and only 2 deaths on the adjacent cays; a colored male, adult, accidentally drowned off Cocoa Cay, and the other, a colored female infant, from convulsions, on Careening Cay.

I inclose herewith 3 triplicate copies of United States Marine-Hospital certificates; the original and duplicate of each copy were attached to the United States consular bills of health, bearing my signature as acting-assistant surgeon of the Marine-Hospital Service in addition to that of the acting consular agent at this port.

Respectfully, WM. H. CARSON,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

COSTA RICA.

Reports from Port Limon—Fruit port.

PORT LIMON, COSTA RICA, *October 14, 1900.*

SIR: I have the honor to submit report for week ended October 13, 1900. The following vessels have cleared from this port:

Date.	Vessel.	Master.	No. of Crew.	Destination.	Number of passengers.	Number of pieces baggage disinfected.
Oct. 7	Steamship Holstein	Voss	20	Mobile, Ala.	0	0
Oct. 8	Steamship Athos	Lund	38	New York		
Oct. 10	Steamship Olympia	Seiders	38	Mobile, Ala.	0	0
Oct. 12	Steamship Banes	Kaland	15	do	0	0

The sanitary conditions of Port Limon and the adjacent vicinity are good. Four deaths during the week as, follows: October 9, a child, 11 years of age, from inanition; October 11, a child, 8 years of age, from

pneumonia; October 13, an adult, 35 years of age, from pernicious fever, and an adult, 35 years of age, from tetanus.

Respectfully,

J. GREY THOMAS,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

PORT LIMON, COSTA RICA, *October 21, 1900.*

SIR: I have the honor to submit report for week ended October 20. The following vessels have cleared from this port:

Date.	Vessel.	Master.	No. of crew.	Destination.	Number of passengers.	Number pieces baggage disinfected.
Oct. 15	Steamship Alleghany	Lome	40	New York		
Oct. 16	Steamship Kitty	Mortansen	18	New Orleans, La	0	0
Oct. 17	Steamship Schleswig	Schluter	23	Cienfuegos, Cuba	23	37
Oct. 18	Steamship Beverly	Israel	37	Mobile, Ala	0	0
Oct. 19	Steamship Hispania	Frockberg	21	do	0	0
Oct. 20	Steamship Anselm	Brown	35	do	0	0

The sanitary conditions of Limon and the adjacent country are good. Six deaths during the week, as follows: October 15, an adult, 20 years of age, from remittent fever; an adult, 30 years of age, from pernicious fever; October 16, an adult, 21 years of age, from violence (murder). October 19, an adult, 29 years of age, from heart disease; October 20, an adult, 19 years of age, from pneumonia, and an adult, 32 years of age, from dysentery.

Respectfully,

J. GREY THOMAS,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

CUBA.

Reports from Cienfuegos, Casilda, and Santa Cruz del Sur.

CIENFUEGOS, CUBA, *October 22, 1900.*

SIR: I have the honor to report that during the week ended October 20, 1900, 18 deaths have occurred in this city from the following causes: Tuberculosis, 5; enteritis, 2; remittent fever, 2; gangrene, 1; congenital debility, 1; old age, 1; pernicious fever, 1; meningitis, 1; tetanus, infantile, 1; mitral insufficiency, 1; hemorrhage of the brain, 1; heart disease, 1.

Of the total number of deaths, 6 occurred in the civil hospital. Death rate for the week, 23.46. Health of port good. There has been no contagious disease reported in this city since the discharge of the last case of yellow fever September 30. Sixteen vessels have entered this port; 16 vessels have been issued bills of health; 28 pieces baggage were disinfected; 89 pieces baggage were inspected and passed, and 80 health certificates were issued to passengers during the week.

Casilda.—Dr. Alejandero Cantero reports 5 deaths in the city of Trinidad. No contagious diseases reported in that city. Inspected 6 vessels during the week.

Santa Cruz del Sur.—Dr. Juan R. Xiques reports no deaths and no

contagious diseases in that vicinity. Health of port good. Inspected 8 vessels during the week.

Respectfully,

F. E. TROTTER,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Inspection of immigrants at Cienfuegos for the week ended October 20, 1900.

CIENFUEGOS, CUBA, *October 22, 1900.*

SIR: I herewith submit report of alien steerage passengers at this port during the week ended October 20, 1900: October 16, schooner *White Water*, from Gubroja, Honduras, with 5 Mexican immigrants.

Respectfully,

F. E. TROTTER,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Report from Havana.

HAVANA, CUBA, *October 22, 1900.*

SIR: I have the honor to submit the following report for the week ended October 20, 1900:

There has been little if any material change in the fever situation since my last report, though the death of Major Peterson, a well-known and popular officer, followed within an hour by the tragic death of his wife, has emphasized the gravity of the situation and has created a feeling of deep concern.

Twenty deaths from yellow fever are reported for the week, and the new cases officially reported have averaged 11 a day. The daily sanitary bulletin for the 19th gives 92 cases under treatment, 21 of whom are Americans, 1 German, 1 Austrian, and 1 Japanese. Two of these cases now under treatment were taken from the harbor, 1 being the Japanese removed September 27 from the schooner *Lottie Moore*, and the other a Spaniard removed on September 26 from a lighter, the *Esperanza*. Both crafts have been lying alongside the wharves, the men having free communication with the town. But few cases have been taken from vessels in the port during the present season, and all, except the cases reported from time to time as arriving sick from Vera Cruz, have been men taken from crafts lying at the wharves. The crews on such vessels have, or take, all the shore liberty they want, and will spend several nights while in port in different resorts in the town.

The general public have been taught to malign the harbor of Havana, ascribing to it the responsibility for the spread of the disease, and it is generally spoken of as "that filthy harbor swarming with disease."

The experience of my predecessors and my own has been that crews of vessels receive their infection from the town. The history of every case taken from a vessel is carefully inquired into and in every instance the vessel "was lying at the dock and the man had been ashore."

Cattle vessels, a class not noted for their cleanliness, come and go every day with nonimmune crews, moor in the open bay, and their crews, who are not allowed shore leave, have not furnished a case of yellow fever this season.

The steamer *Tarpon*, used by the Plant Line as a passenger transfer boat, has been in this port all the past summer. She has a nonimmune

crew, and yet no cases have developed on board, for she lies moored to a buoy at night and her crew remain on board.

The harbor is the most pleasant part of Havana, and there is no section of it as dangerous as the finest edifice in the city with a cesspool under it, which has not been cleaned in a hundred years.

The infection in many of the public buildings is now claiming the attention of the city sanitary authorities. Cases have occurred with 2 deaths in the building occupied by the treasury and auditor's departments. Two cases were recently removed from the governor-general's palace and a number from Palacio Segundo de Cabo, occupied by the quartermaster's department. Both of the latter buildings have living apartments. Of those who have been taken sick with the fever and were either employed or living in the Palacio Segundo were Major Cartwright, Major Peterson, Major Dodge, Captain Page, and several clerks. This building has been ordered closed and the offices moved out of the city to Principe. The situation is a difficult one for any sanitary board to cope with, as it can only deal directly with certain buildings or a small section and can not hope to relieve the entire city under existing conditions. Radical measures for the city are out of the question until the city is properly sewered. The disinfection of the walls, floors, and privies of a few buildings is not sufficient, for reinfection is easy and quick, as has been noted in certain buildings disinfected more than once this season.

For the present I consider the best and safest course to be to remove as many of the public and military offices as is possible out of the city and permitting communication with the city by day only.

The immigrants who have been held under observation at Mariel on account of a case of smallpox removed from the French steamer *La Navarre*, were released on the 17th all well and contented. The steamship company furnished them subsistence and spared no pains or expense to please.

I have instructed Steward Goodman to remain at the station with several of the guards in order to complete the work of cleaning the grounds and to disinfect all of the buildings which have been lately used. I am anxious to properly equip Mariel station as soon as possible and to make many needed repairs. I have written the Bureau under separate cover relative to the matter and have forwarded requisition for the proper equipment.

A case suspicious of yellow fever was removed from the building occupied by the captain of the port, and the premises were disinfected by this Service under the supervision of Acting Asst. Surg. E. F. McConnell.

The Spanish steamer *Martin Saenz* arrived here on the 19th with 373 immigrants. Very few of the passengers had been vaccinated, and the vessel was in almost as foul and as unsanitary condition as was that of the *Gadditano*, previously reported. Three hundred points of vaccine virus were sent out to the vessel and all were properly vaccinated by the boarding officers before they were allowed to land. On the 13th Acting Assistant Surgeon Gomez, at Gibara, reported that he had removed a suspicious case of yellow fever, a second-class passenger on the coastwise steamer *Julia*. Diagnosis was confirmed on the following day. The patient died on the night of the 15th. Before allowing the steamer to proceed he gave the cabins a thorough and complete disinfection.

I inclose the mortality report for the week.

Respectfully, A. H. GLENNAN, *Surgeon, U. S. M. H. S.*

The SURGEON-GENERAL, *U. S. Marine-Hospital Service.*

[Inclosure.]

Mortuary report for the week ended October 20, 1900.

Tuberculosis	13	Pernicious fever	1
Pneumonia	4	Malarial	2
Yellow fever	18	Total number of deaths from all causes	109
Enteritis	5		

Report for week ended October 20, 1900.

PASSENGER DEPARTMENT.

Passengers inspected	148	Applications for immune certificates rejected	8
Passengers vaccinated	13		
Immune certificates issued	36		

DISINFECTING PLANT.

Pieces of baggage disinfected	202	Express matter inspected and passed	22
Mail matter disinfected	11	Freight inspected and passed	600
Express matter disinfected	43		
Freight disinfected	238	Total amount handled	1,200
Baggage inspected and passed	74		

STEAM BARGE SANATOR.

Vessel disinfected	4	Pieces of Florida baggage disinfected	24
Viveros disinfected	18		

OUT-DOOR DEPARTMENT.

Vessels inspected and entered	28	Immigrants inspected	543
Vessels inspected and cleared	20		

Inspection of immigrants at Havana, Cuba, during the week ended October 20, 1900.

HAVANA, CUBA, *October 20, 1900.*

SIR: I herewith submit report of alien steerage passengers at this port during the week ended October 20, 1900:

Date.	Vessel.	Where from.	No. of immigrants.
Oct. 14	Steamship City of Washington	New York	26
Do	Steamship Cayo Largo	London	1
Oct. 16	Steamship Aransas	New Orleans	1
Do	Steamship Yucatan	Campeche, Vera Cruz, and Progreso	19
Do	Steamship La Navarre	Vera Cruz	15
Oct. 17	Steamship Havana	New York	11
Do	Steamship Leon XIII	Genoa, Spain, New York	91
Oct. 18	Steamship Senior	Puerto Cortez	5
Oct. 19	Steamship Martin Saenz	Genoa, Spain, Porto Rico	373
Oct. 20	Steamship Mascotte	Tampa	1
	Total		543

Respectfully,

A. H. GLENNAN,
Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Reports from Matanzas, Cardenas, Isabela de Sagua, and Caibarien.

MATANZAS, CUBA, *October 17, 1900.*

SIR: I have the honor to submit herewith the following sanitary report of the quarantine district under my command for the week ended October 13, 1900:

Matauzas.—Fourteen deaths occurred in the city of Matanzas during the period covered by this report, showing a mortality of 16.13 per 1,000. The principal causes of death were as follows: Malarial fever, 3; tuberculosis, 2; enteritis, 2; cancer, 1; pneumonia, 1; senility, 1; other causes, 4. No case of infectious or contagious character was reported. Four vessels were inspected and passed on arrival. Five bills of health were issued to foreign vessels. The Cuban steamship *Lauenburg*, bound for Mobile, Ala., was disinfected on the 13th instant at this port. Thirty-five health certificates were issued to persons leaving the island; 7 immune certificates were issued to laborers employed by the Munson boats at ports on the north coast of the island for discharging cargoes; 22 pieces of baggage were inspected and passed and 17 pieces disinfected; and 114 bundles of clothes and bedding were disinfected belonging to the Cuban steamship *Lauenburg*.

Cardenas.—Acting Asst. Surg. Enrique Saez reports that 4 deaths occurred in Cardenas during the week of the following causes: Enteritis, 1; senile debility, 1; internal hemorrhage, 1; tetanus, 1. No case of infectious or contagious character was reported. The death rate during the week was 8.40 per 1,000. Six coasting vessels arrived. No bill of health was issued.

Isabela de Sagua.—Acting Asst. Surg. Pedro Garcia Riera reports that the death rate during the week was 32.86 per 1,000. One foreign vessel and 10 coasting vessels were inspected and passed on arrival. One bill of health was issued to a foreign vessel, and 17 certificates of inspection to coasting vessels. No case of a particularly infectious or contagious character was reported.

Caibarien.—Acting Asst. Surg. Leoncio Junco reports that the sanitary condition of port and town is good; malarial fever being the prevalent disease. The death rate for the week was 4.02 per 1,000. Nine vessels were inspected and passed on arrival; 2 of these were foreign vessels and 7 coasting vessels. Two bills of health were issued to foreign vessels and 3 certificates of inspection to coasting vessels.

Respectfully,

G. M. GUITÉRAS,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

MANTANZAS, CUBA, *October 23, 1900.*

SIR: I have the honor to submit herewith the following sanitary report of the quarantine district under my command for the week ended October 20, 1900:

Matanzas.—Fourteen deaths occurred in the city of Matanzas during the period covered by this report, showing a mortality of 16.13 per 1,000. The principal causes of death were as follows: Tuberculosis, 5; malarial fever, 2; typhoid fever, 1; enteritis, 1; cancer, 1; other causes, 4. The following cases of infectious or contagious character were reported: Typhoid fever, 1; diphtheria, 1. Five vessels were inspected and passed on arrival. Five bills of health were issued to foreign vessels. The American bark *John R. Stanhope* and the British steamship *Ardanrose*, bound for Mobile, Ala., were disinfected on the 19th instant at this

port. Fifty-eight health certificates were issued to persons leaving the island, 1 of these via Havana. Thirty-four pieces of baggage were inspected and passed and 20 pieces disinfected. Fifty-five bundles of clothes and bedding were disinfected; 25 of these belong to the American bark *John R. Stanhope* and 30 to the British steamship *Ardanrose*.

Cardenas.—Acting Asst. Surg. Enrique Saez reports that 14 deaths occurred in Cardenas during the week of the following causes: Heart disease, 4; tuberculosis, 3; arterio-sclerosis, 2; pneumonia, 1; other causes, 4. No cases of infectious or contagious character were reported. The death rate during the week was 14.41 per 1,000. Eleven vessels were inspected and passed on arrival. One bill of health was issued to a foreign vessel.

Isabela de Sagua.—Acting Asst. Surg. Pedro Garcia Riera reports that the death rate during the week was 18.77 per 1,000. Eleven coasting vessels were inspected and passed on arrival. Ten certificates of inspection were issued to coasting vessels. No case of a particularly infectious or contagious character was reported.

Caibarien.—Acting Asst. Surg. Leoncio Junco reports that the sanitary condition of port and town is good; malarial fever being the prevalent disease. Three foreign vessels and 9 coasting vessels were inspected and passed on arrival. Three bills of health were issued to foreign vessels and 8 certificates of inspection to coasting vessels.

Respectfully,

G. M. GUITÉRAS,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Reports from Santiago, Manzanillo, and Guantanamo.

SANTIAGO DE CUBA, *October 17, 1900.*

SIR: I have the honor to submit herewith the following sanitary report of the fourth quarantine division of the island of Cuba under my command, for the week ended October 13, 1900.

Santiago.—During this period there was a total of 21 deaths reported in the civil population of the city, an increase of 3 over that of the previous week, making the death rate 25.39 per 1,000. Estimated population 43,000. The following were the chief causes of death: Tuberculosis, 5; enteric fever, 1; malarial fever, 3; pneumonia, 1; bronchitis, 3; infantile tetanus, 1; other causes, 7; total, 21. On October 9, 1900, the British steamship *Grayfield* arrived from Havana and was held two days to complete five days since leaving that port. Two of the crew were found sick on this vessel, suffering with malarial fever. One immune and 18 nonimmune certificates were issued to passengers embarking on the U. S. A. transport *Rawlins*, which sailed October 12, for New York. The baggage of these passengers was inspected and passed, as none were destined for points south of the southern boundary of Maryland. On October 13, 8 immune and 8 nonimmune certificates were issued to passengers embarking on the American steamship *Niagara*, sailing for New York. All baggage was inspected and passed. The health and the sanitary conditions of the port remain good.

Manzanillo.—Acting Asst. Surg. R. de Socarras reports 4 deaths, due to the following causes: Meningitis, 1; nephritis, 1; cirrhosis, of the liver, 1; old age, 1; total, 4. Death rate 14.38 per 1,000. Estimated population, 14,464. The health conditions of town and vicinity are reported excellent.

Guantanamo.—Acting Asst. Surg. Luis Espin reports 8 deaths, due to

the following causes: Pernicious malarial fever, 2; heart disease, 4; enteritis, 1; athrepsia, 1; total, 8. Death rate, 23.11. Estimated population, 18,000.

Daiquiri.—Nothing of interest reported.

Respectfully,

R. H. VON EZDORF,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Inclosure.]

Report of treatment of passengers' baggage for the week ended October 13, 1900, port of Santiago de Cuba.

Date.	Name of vessel.	Disinfected and passed—						Inspected and passed—				
		Formaldehyd gas.			Steam.							
		Boxes.	Trunks.	Valises.	Bundles.	Trunks.	Valises.	Baskets.	Boxes.	Bundles.	Trunks.	Valises.
Oct. 11	Steamship Cosme de Herrera (baggage arrived from Havana for this port).	.....	1	3	a1	.....	.....	.....	.....	.....	.....	.....
Oct. 12	U. S. A. transport Rawlins (for New York)..	.....	.....	.....	.....	.....	.....	.....	5	6	6	12
Oct. 13	Steamship Niagara (for New York).....	.....	.....	.....	.....	.....	.....	.....	4	.....	13	17

a Bichloride machine.

Inspection of immigrants at Manzanillo during the week ended October 13, 1900.

PORT OF MANZANILLO, CUBA, *October 13, 1900.*

SIR: I herewith submit report of alien steerage passengers at this port during the week ended October 13, 1900: October 8, Norwegian steamship *Bergen*, from Truxillo, Honduras, with 2 immigrants. October 10, British schooner *Maryland*, from Montego Bay, Jamaica, with 2 immigrants.

Respectfully,

R. DE SOCARRAS,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ENGLAND.

Report from Liverpool.

LIVERPOOL, ENGLAND, *October 10, 1900.*

SIR: I have the honor to transmit the usual report for the week ended October 6, 1900: During the week there were inspected 19 ships, with crews of 1,776; cabin passengers, 1,463; steerage passengers, 1,185. There were 5 rejections for chicken pox and measles; otherwise the health of persons embarking was remarkably good. I believe that the physical condition of emigrants from the port of Liverpool will average better than any other port in Europe. With the exception of a few Russian Jews, the only people (third class) embarking here for America from the Continent are Scandinavians, who are usually a fine class physically; the remainder of the third class are English and Irish.

The health of Liverpool is better than for some years, the death rate for the past week being the lowest for the corresponding week for five years. The precautions I wrote of in my last report against Glasgow are still in force, although there has been no new case for almost three weeks. The work here is running smoothly and with little friction with the shipping people.

Respectfully,

JOHN F. ANDERSON,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

FRANCE.

Special regulations against plague.

PARIS, FRANCE, *October 12, 1900.*

SIR: I have the honor to submit herewith translation of the special regulations now in force against plague at the various ports of France. This translation is arranged to bring it up to date, including the last decree officially published October 3.

Respectfully,

S. B. GRUBBS,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Inclosure.]

Special measures to be taken against plague.

The sanitary régime applicable to vessels arriving with bill of health indicating plague (or with clean bill of health if under conditions of article 54 of ruling of January 4, 1896), differs according as the vessel is acquitted (indemné), suspected, or infected.

VESSELS ACQUITTED.

The vessel indemné (having had neither death nor case of plague on board either before departure during the voyage or at the time of arrival) will be submitted to the following régime:

First. Medical inspection of passengers and crew.

Second. Disinfection of dirty linen, personal effects in use, bedding, as well as all other objects or baggage that the sanitary officer of the port considers contaminated.

If the vessel has left the locality contaminated by plague more than ten days, the measures above will be immediately taken and the vessel given free pratique. If the vessel left the contaminated locality less than ten days before, a sanitary passport will be delivered to each passenger, indicating the day when the vessel left the contaminated port, the name of the passenger and that of the commune where he states he is going. The sanitary authority gives at the same time notice of the departure of the passenger to the mayor of that commune and calls his attention to the necessity of watching said passenger from a sanitary standpoint until the expiration of the ten days, to date from the departure of the vessel. (Surveillance Sanitaire.)

The crew will be submitted to the same surveillance. The discharge of cargo shall be begun only after all the passengers are landed. The sanitary officer can order the disinfection of all or a part of the vessel, but this disinfection will be done only after all passengers are disembarked. In all cases the drinking water on board will be renewed and the bilge water discharged after being disinfected.

SUSPECTED VESSELS.

A suspected vessel (on board of which there have been 1 or many cases of plague confirmed or suspected at the time of departure, during the voyage, but no new cases during the last twelve days) shall be submitted to the following régime:

First. Medical inspection of the passengers and crew.

Second. Disinfection of dirty linen, personal effects in use, bedding, as well as all other objects or baggage that the sanitary officer of the port considers contaminated.

The passengers will be disembarked as soon as possible after these operations are

completed. To each one is delivered a sanitary passport, giving the date of the arrival of the vessel, the name of the passenger and that of the commune to which he is going. The sanitary officer gives at the same time notice of the departure of the passenger to the mayor of that commune, and calls his attention to the necessity of keeping watch on him from a sanitary standpoint for a period of five days from the arrival of the vessel.

The crew is submitted to the same surveillance. The drinking water on board is renewed and the bilge water discharged after being disinfected. The discharge of cargo is commenced only after all passengers are landed. The disinfection of the vessel is obligatory and is done after the passengers are landed and the merchandise discharged.

INFECTED VESSELS.

An infected vessel (having or having had one or many cases of plague confirmed or suspected during the last twelve days) will be submitted to the following régime:

First. The sick will be immediately disembarked and isolated until well.

Second. The other persons will then be landed as rapidly as possible and put under an observation of which the duration varies according to the sanitary condition of the vessel and the date of the last case. The duration of this observation can not exceed ten days after landing or after the last case occurring among the persons landed. These are divided into as many groups as possible in order that, should a case occur in one group, the duration of the isolation shall not be lengthened for all the passengers.

Third. Soiled linen, effects in use, bedding, and all other objects or baggage that the sanitary officer of the port considers contaminated shall be disinfected.

Fourth. The drinking water shall be renewed and the bilge water discharged after being disinfected.

Fifth. The disinfection of the vessel, or the contaminated part of it, shall be done after the discharge of the passengers and cargo, if the latter is to be discharged.

The unloading of freight shall be begun after the passengers are landed, and the disinfection of the vessel begun only after this is discharged.

II.

In all cases the persons who have had charge of the total or partial disinfection of the vessel who have come on board before or during the disinfection of the vessel, or the discharge and disinfection of the cargo, or who have remained on board during these operations shall be isolated for a period to be fixed by the sanitary officer, and which can not exceed ten days from the end of these operations for vessels whose bill of health indicates plague at port of departure.

The vessel shall be isolated until the freight is discharged and the disinfection completed.

III.

It is forbidden until further ordered to import into France and Algeria drills, rags, fresh animal débris, horns, or hoofs, coming directly or indirectly from any locality where the presence of plague has been proved.

IV.

It is also forbidden to ship in transit through France or Algeria the articles indicated in Article III above whenever an unloading or manipulation of any kind is necessary during this transit.

V.

The following will be admitted after disinfection:

Wools raw or manufactured coming directly from any locality contaminated by plague, linen for wearing having or having not been worn, cloths or clothing having or having not been worn, raw hides and fresh skins coming directly or indirectly from any locality where the presence of plague has been proved.

VI.

(Substituted for article repealed by decree published October 3, 1900.)

Vessels coming from localities known to be infected by plague or carrying the articles enumerated in Article III of the decree of April 15, 1897 (namely the foregoing), can not enter France or Algeria except by the ports of Dunkerque, Havre, St. Nazaire, Pauillac, Marseilles, and Algiers.

VII.

Any package containing any of the objects mentioned in Articles III and V above and coming either from the ports situated between the mouth of the Ganges and the Red Sea including Ceylon and the ports of the Persian Gulf, or from one of the ports of the Red Sea or a Mediterranean port of Egypt except those known to be infected by plague, must be accompanied by a certificate of origin visèed by a French consular agent.

GERMANY.

Plague in Madagascar.

BERLIN, GERMANY, *October 16, 1900.*

SIR: * * * A telegram from Antananarivo states that notwithstanding all precautionary measures plague has broken out in Tamatave (Madagascar).

Respectfully, JOSEPH B. GREENE,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Steamship Dolphin at Calais reported infected with plague.

BERLIN, GERMANY, *October 18, 1900.*

SIR: I have the honor to report that according to to-days' press dispatches the steamer *Dolphin*, engaged in trade between London and Calais (France), is in the harbor of Calais infected with plague. The steamer was disinfected throughout. In the future all steamers and cargo from London will be disinfected.

Respectfully, JOSEPH B. GREENE,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

GUATEMALA.

Report from Livingston—Fruit port.

LIVINGSTON, GUATEMALA, *October 16, 1900.*

SIR: I have the honor to submit my report for the week ended October 16, 1900. The health of Livingston remains good. No deaths reported for the week. October 10 inspected the steamship *Managua*, Olvik; crew, 16; passengers, none; cargo, green fruit; all in good sanitary condition. Certificate inclosed. Dating from October 15, New Orleans has removed quarantine against passengers—of course after they had complied with the usual regulations.

Respectfully, SAMUEL HARRIS BACKUS,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON GENERAL,
U. S. Marine-Hospital Service.

HONDURAS.

Report from La Ceiba—Fruit port.

LA CEIBA, HONDURAS, *October 6, 1900.*

SIR: I have the honor to make the following report for the week ended October 6, 1900: Six vessels cleared from this port for the United

States as follows: September 30, steamship *Banes*, for Mobile, Ala. October 2, steamship *Suldal*, for New Orleans, La. October 5, steamship *Nicaragua*, for New Orleans, La. October 6, steamship *Briefond*, for New Orleans, La.; steamship *Iberia*, for New Orleans, La.; steamship *Bergensen*, for New Orleans, La.

The general health in this port and vicinity continues good. One death was reported for the week—an infant, from dysentery.

Respectfully,

SPENCER FRANKLIN,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Correction.]

LA CEIBA, HONDURAS, *October 8, 1900.*

SIR: I have to correct an error in my report for week ended September 29, 1900: The steamer *Jarl* was inspected, and left for New Orleans on September 26. Inclosed please find copies of papers issued to same, which by mistake were put in my papers for week ended October 6, and have just been discovered.

Respectfully,

SPENCER FRANKLIN,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

LA CEIBA, HONDURAS, *October 15, 1900.*

SIR: I have the honor to make the following report for the week ended October 13, 1900: Three vessels cleared for the United States, 1 passenger left, and 2 pieces of baggage were disinfected, as follows: October 12, steamship *Bratton*, for Mobile, Ala. October 13, steamship *Alliance*, for New Orleans; steamship *Jarl*, with 1 passenger for New Orleans.

General health in this port and vicinity continues good. One death reported during the week—a male, the result of a gunshot wound.

Respectfully,

SPENCER FRANKLIN,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Report from Puerto Cortez—Fruit port.

PUERTO CORTEZ, HONDURAS, *October 18, 1900.*

SIR: I have the honor to make my report for the week ended October 18, 1900, and inclose list of vessels inspected and cleared. The health and sanitary conditions of the port and adjacent country continue good. No death reported for the week.

Respectfully,

R. H. PETERS,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Inclosure.]

List of vessels inspected and cleared during week ended October 18, 1900.

Date.	Vessel.	Master.	Number of crew.	Destination.	Number of passengers.	Number of pieces baggage disinfected.
Oct. 13	Nor. ss. Espana	Danielsen	16	Mobile, Ala.		
Do	Ger. ss. Senior	Steinharth	18	Havana, Cuba		
Oct. 16	Dan. ss. Tyr	Funder	17	New Orleans, La.		
Oct. 17	Am. ss. Stillwater	Galt	32	do	17	24
Oct. 18	Nor. ss. Utstein	Aarsvald	17	do	3	3

ITALY.

Report from Naples.

NAPLES, ITALY, *October 17, 1900.*

SIR: I have the honor to report that for the week ended October 17 the following ships were inspected:

October 13, the steamship *Vincenzo Florio*, of the Italian General Navigation Company, bound with passengers and cargo for New York. There were inspected and passed 19 cabin and 879 steerage passengers and 320 pieces of large and 980 of small baggage. Two hundred and forty-seven pieces of baggage were disinfected by steam. There were also inspected 13 cabin and 59 steerage passengers from Genoa.

October 15, the steamship *Heathmore*, bound in water ballast for Brunswick, Ga. This steamer had left Cardiff, Wales, almost three weeks previously. The captain reported that there had been no sickness during the voyage; the crew was carefully inspected and found in good condition and, although this ship was from a port reported to be infected with plague, everything being found in good condition, no other measures were considered necessary.

October 16, the steamship *Patria*, of the Fabre Line, bound with passengers and cargo for New York. There were inspected and passed 969 steerage passengers. One hundred and seventy-two pieces of baggage were disinfected by steam. Two hundred and sixty pieces of large and 740 pieces of small baggage were inspected.

October 17, the steamship *Karamania*, of the Anchor Line, bound with passengers and cargo for New York. There were inspected and passed 367 steerage passengers and 57 pieces of large and 470 pieces of small baggage. One hundred and thirty-one pieces of baggage were disinfected by steam.

Smallpox.—This disease still continues to spread in the vicinity of Naples, but it can not be considered to be present in epidemic form in any of the towns at present. This disease is quite general over the entire Sorrentine peninsular.

Since my last report I have learned privately of about a dozen cases of smallpox in Naples. To-day the newspapers report 1 death from the disease in Naples.

Respectfully,

VICTOR G. HEISER,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

JAPAN.

Plague in Japan from July 1 to September 15, 1900.

YOKOHAMA, JAPAN, *September 25, 1900.*

SIR: In accordance with instructions from your office, dated July 7, 1900, I have the honor to submit the following report of conditions and transactions in the district under my supervision, for the period July 1 to September 15, 1900:

On July 16, occurred the last case of the second outbreak of plague in Osaka, which began about April 10.

On August 15, a case of plague was detected upon the steamship *Coptic*, outward bound from San Francisco to Hongkong, via Honolulu, Yokohama, and the Japanese and Chinese ports south of the last-named place, upon the arrival of the ship at Kobe. This case, which presented both bubonic and pneumonic symptoms, proved fatal on the 18th, and the ship was duly quarantined for ten days from the completion of the process of disinfection, resuming her voyage on the 28th. The interesting point of this case relates to the probable source of infection. No plague had been present in Honolulu, where the victim, a Chinese steerage passenger, embarked, for several months before the arrival of the ship at that port, nor has there as yet been a single instance of the disease in Yokohama. It seems credible, therefore, that the bacilli were contained in effects, perhaps packed during the prevalence of the plague in Honolulu, and which were opened or worn during the voyage. No second case had appeared upon the ship up to the time of her arrival here, on the return voyage, September 13.

August 20, the routine disinfection of steerage passengers at Yokohama, which began with the first epidemic appearance of plague at Kobe in November, 1899, had been since steadily maintained, was discontinued upon the urgency of the steamship companies concerned, I consenting in view of the facts that no case of plague had occurred in Japan for over one month, that no other infectious quarantinable disease was prevalent, and that emigration of the lower or laboring classes was, as it still is, practically prohibited by the Japanese Government. The shipping companies were, however, formally notified at this time that, should any quarantinable disease manifest itself epidemically, the precautions required will be again strictly carried into effect, and that, in such a case, they must supply the necessary buildings and equipment.

On September 11, plague was again detected in Osaka, and, from the 11th to the 14th there were 8 cases, all fatal. On the 15th, when the presence of the malady as an epidemic, was first made known, I cabled you at once. On the same date I issued to the steamship companies through their agents, the following notification, which I trust they will speedily act upon:

YOKOHAMA, JAPAN, *September 15, 1900.*

To agents of steamship companies.

The renewed outbreak of plague in Osaka demands the immediate enforcement of the precautions outlined in circular from this office of date April 15, 1900.

As the former disinfection depot has been broken up, I would suggest that you, without delay, arrange with your colleagues in the steamship business for its reestablishment at once, upon the same general lines as before. I believe that the premises formerly occupied are still available.

I would remind you that I am instructed to refuse bills of health to any ship carrying passengers who have not been submitted to the treatment prescribed by the United States Quarantine Regulations.

Respectfully,

STUART ELDRIDGE, M. D.,
Sanitary Inspector, U. S. M. H. S.

From July 1 to September 15 I inspected 49 vessels, of which 7 were sailing ships and 42 steamers, 25 of the latter carrying steerage passengers; or an average of 1 ship visited for inspection every thirty-seven and one-half hours. The total number of steerage passengers examined was 2,705, and of crews, 3,825, or, in all, 6,530 persons inspected.

During the same period 342 pieces of baggage were disinfected, and, including these, 464 inspected.

As smallpox has not been present either in Yokohama or on board of any ship inspected during the term covered by this report, in compliance with the regulations of January 16, 1900, no vaccinations have been performed.

The measures taken by the Japanese Government for restricting the extension of plague have undoubtedly been exceedingly successful. Conditions among the lower classes in Japan, and in the crowded slums of a city like Osaka, which has long been regarded as a most unhygienic locality, are so favorable to the propagation of any filth born or nurtured malady that the limitation of the disease to a very small number of people must be regarded as a most brilliant example of the effectiveness of modern scientific methods.

With regard to the actual extirpation of the germs of the pestilence, though every means known to sanitarians has been employed for this purpose, and with apparent success so far as Kobe is concerned, the results, on the whole, are not reassuring. It is true that in Osaka the disease ceased to appear from January 11 until April 8 or 10 of this year, but then, breaking out again, it continued until July 16, when it again became dormant until September 11.

Now, independently of the well-recognized peculiarity of the epidemicity of pest, in exhibting periods of amelioration or cessation, followed by aggravation, not always with apparent cause, it may be stated that, in the case of Osaka, the first interval of freedom from cases, after the primary outbreak, coincided almost exactly with the onset of the colder weather of the winter, while again, the term of abeyance from July 16, to September 11, corresponded to the hottest and at the same time, least humid summer known in Japan for many years. Such seasonal periodicity is, of course, within limits, to be expected in the case of a disease of which the history seems to demonstrate its decided predilection for the more temperate seasons, which will, probably, be often manifested, irrespective of any measures employed to combat the epidemic.

Researches in Japan strongly support the growing tendency to consider the rat the most important agency in the maintenance and distribution of the pest bacillus, if not the original source of epidemics of plague among men.

Of course, this fact, if it be a fact, renders the extinction of the disease more difficult of achievement than if it were a malady of men only, or of men and of animals less widely distributed, furtive, and cunning than Mus decumanus.

In Osaka, particularly, in attempting upon a large scale the destruction of the rats, a serious obstacle was encountered, chiefly in the quarters inhabited by the better class of traders, in the superstition of the latter which connects their own material prosperity with the presence of rats about the premises. Whether this superstition is a growth of the period, not very remote, when, in Japan, rice, in kind, constituted the greater portion of the currency and most of the stored wealth of the people; and numerous rats implied full warehouses, I can not say, but it seems probable that such is the case. This well-rooted belief will

certainly go far in counteracting the attempts of the sanitary authorities to reduce the number of rodent vermin.

Respectfully, STUART ELDRIDGE,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Plague in Osaka from September 11 to 27.

YOKOHAMA, JAPAN, *September 29, 1900.*

SIR: As regards the outbreak of plague at Osaka, I have the honor to report that, from the appearace of the disease September 11 up to the 27th instant, there have been 26 cases.

The authorities are using all the means in their power for the control of the disease in Osaka itself, but I can not learn that the system of inland quarantine and inspection, which was strictly and effectively applied during the epidemic of last winter, has as yet been enforced.

Respectfully, STUART ELDRIDGE, M. D.,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Report of maritime quarantine service at Kobe from June 30 to September 15, 1900.

KOBE, JAPAN, *September 30, 1900.*

SIR: I have the honor to send in my supplemental report for the period from June 30 to and including September 15, 1900.

The number of vessels bound for the United States of America from Kobe was 33, 3 of these being sailing ships, while 9 left Kobe for Manila. Their various destinations are as follows: Fourteen to San Francisco via Honolulu, 7 to New York (one sailing ship), 3 to Tacoma, 3 to Seattle, 2 to Portland, Oreg., 2 to San Diego via Honolulu, 2 to Port Townsend (sailing ships), 9 to Manila; total, 42.

The nationalities were: British, 22; American, 7; Japanese, 7; German, 4; Norwegian, 2.

The hospital ship *Relief* came up from Nagasaki and remained in harbor here for a few days before returning to Nagasaki and Taku.

Two United States transports likewise came in to land their horses for a run ashore for some days before proceeding on to Manila.

The number of emigrants and steerage passengers taken on here and examined was 304. The number of Chinese steerage in transit from Hongkong examined was 830.

Another recurrence of plague occurred in Osaka on September 8, when 2 cases were discovered, after the city had been free from the disease for seventy days. Fourteen cases and 8 deaths were officially notified up to September 15. All the usual precautions were at once taken and continue to be carried out.

This district has been remarkably free from cholera this year, 1 case and 1 death being notified in July and 2 cases in August.

The Occidental and Oriental Steamship Company's steamer *Coptic* was placed in quarantine by the Japanese authorities on August 16, when on her vayage to Hongkong.

A Chinese rice farmer living 14 miles from Honolulu was taken on board as a steerage passenger on August 2, at Honolulu. On the steamer's arrival at Kobe on August 15 he was found to be suffering

from high temperature, buboes, and slight pulmonary trouble. The quarantine officers removed him from the ship and found the bacilli of plague in his sputa. The Chinaman died in the hospital on August 19, and was immediately cremated. The ship and contents were placed in quarantine for ten days. Baths were given on shore to each individual, both passengers and crew, sulphur burned throughout the ship, and decks, floor, and ceilings washed down with carbolic acid.

On cleaning steerage deck where this Chinaman had been living, three dead rats were found, recently dead, which on being examined on shore were said to be infected with the plague bacilli.

No other case of illness occurred on board the ship during her voyage or while she was lying for the ten days in quarantine.

Respectfully, J. BUCKWILL FOWLER,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

MEXICO.

Report from Vera Cruz.

VERA CRUZ, MEXICO, *October 20, 1900.*

SIR: I have the honor to make the following report for the week ended October 20, 1900:

During the week 8 cases and 5 deaths were reported from yellow fever, and 39 deaths from all causes. No cases of smallpox were reported.

Five vessels were inspected and issued bills of health. Only 1 vessel carried passengers, steamship *Vigilancia*. She had 105 passengers, only 39 of whom were for Cuba and New York. These 39 were issued health certificates.

I send you under separate cover a full report of the commission that was appointed to witness the effects of the serum of Dr. Bellinzaghi upon yellow fever. The report is in Spanish, and I am afraid that a translation would suffer in my hands, so send it as it is.

I am indebted to Dr. N. del Rio for the report, and trust that it will be sufficiently interesting to have translated and published.

Respectfully, S. H. HODGSON,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

NICARAGUA.

Further concerning epidemic among pigs in Managua.

BLUEFIELDS, NICARAGUA, *October 16, 1900.*

SIR: I have the honor to make further reply to Bureau letter of September 6, 1900 (G.), as to an item in the Medical Record of the existence of a "dangerous epidemic causing the deaths of rats and pigs at Managua, Nicaragua." I had written a letter of inquiry to the U. S. consul at that place, and his answer just received pronounces the report a gross exaggeration, based on the facts "that on or about June 15 a few pigs were seen to drop over in the streets and die, and the government issued an order forbidding the sale of lard and the killing of pigs at the slaughter houses."

These precautions frightened the people and wild rumors were soon

prevailing. The above-mentioned order was recalled in July, as there was no further evidence of disease among the pigs. The consul further writes that there was nothing suspicious of bubonic plague in the disease which killed the few pigs.

Respectfully,

D. W. GOODMAN,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Report from Bluefields—Fruit port.

BLUEFIELDS, NICARAGUA, *October 18, 1900.*

SIR: I have the honor to submit the following weekly report: Two steamships have been inspected and cleared, both for New Orleans—the *Jno. Wilson*, with 8 passengers and 7 pieces of baggage, and the *Condor*, with 4 passengers and 12 pieces of baggage. All baggage was disinfected under my supervision, and proper certificates given to passengers and masters of the ships.

There were no deaths reported in Bluefields for the week ended October 14.

The sanitary condition of this port and adjacent territory continues good.

Respectfully,

D. W. GOODMAN,
Acting Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

PHILIPPINE ISLANDS.

Maritime quarantine at Manila, Iloilo, and Cebu during August, 1900.

MANILA, P. I., *September 15, 1900.*

SIR: I have the honor to submit report of quarantine transactions for the month of August, 1900, as follows:

Manila.

Bills of health issued—	
To foreign ports	34
To domestic ports	121
Number of vessels inspected—	
To foreign ports	2
From foreign ports	55
From domestic ports	119
Number of passengers inspected—	
Cabin	836
Steerage	3,462
Total number crew inspected	7,041
Total number persons quarantined for observation	16
Total number pieces of baggage disinfected	670
Total number pieces of baggage inspected and passed	473

Iloilo.

Bills of health issued—	
To foreign ports	9
To domestic ports	62
Number of vessels inspected—	
From foreign ports	7
From domestic ports	41
Number of passengers inspected—	
Cabin	73
Steerage	1,199
Total number crew inspected	1,664

Cebu.

Bills of health issued—	
To foreign ports	0
To domestic ports	301
Number of vessels inspected—	
From foreign ports	8
From domestic ports	167
Number of passengers inspected—	
Cabin	108
Steerage	1,154
Total number of crew inspected	3,465

Respectfully,

J. C. PERRY,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Plague in Manila September 9 to 15.

MANILA, P. I., *September 20, 1900.*

SIR: I have the honor to report that during the week ended September 15, 1900, there occurred only 1 case of plague in Manila, the victim being a Chinese. Total number of deaths from all causes during the same time, 256.

Respectfully,

J. C. PERRY,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

PORTO RICO.

Report on the high mortality on the island.

PONCE, P. R., *October 12, 1900.*

SIR: I have the honor to make the following report upon the causes of the abnormally high death rate in the municipality of Ponce, P. R., during the past year.

In getting data for this report, I have been assisted in all possible ways by the authorities and the physicians of Ponce, and in the Hospital Tricoche and the Hospital Civil, I have had access to all cases through the kindness of the doctors in charge. The accompanying table was taken from the reports made to the municipal judge. The reports are so inaccurate in diagnosis that complete definite mortality statistics can not be compiled from them, but the table is sufficient for my purposes.

The municipality of Ponce includes the city proper, the playa, and the outlying districts, called "barrios," extending several hours ride from the city. Its total population as shown in the United States census is 33,477, of whom about half live in and close around the city and suburbs. About 40 per cent of the deaths occur in the outside districts, and these cases are seldom seen by a physician. The remaining 60 per cent do not properly represent the city's proportion, as large, numbers, which it is impossible to estimate, come in on their last legs and die in the city. They come not only from this municipality, but from every nook and corner of the island. Ponce has the unfortunate name of being charitable on account of her several hospitals and charity organizations. It was the first on the island to do private sys-

tematic work along this line, and has become the mecca of the sick and the destitute.

Predisposing causes.—The class of people among whom this high mortality exists are the lower classes. The better classes have not furnished more than their normal quota, and these from the usual causes. These lower classes are a mixture of Spanish, Indian, and negro blood, the latter predominant. Many are pure negroes. Generations of an underfed, unsanitary, and immoral life have produced a race short statured, flat chested, and physically weak, as a general rule. Like children, they have never been accustomed to think or do for themselves and have little stamina, becoming, in the face of disease or misfortune, passive and apathetic.

A very important predisposing cause is the *ankylostomum duodenale*, with which they are largely infected. Not having the facilities, I could not search for microscopic evidence of this. However, this phase of the subject as well as the blood examinations, have been dealt with by Lieut. B. K. Ashford, assistant surgeon, U. S. A., New York Medical Journal, April 14, 1900. He found the ova in 19 of 20 selected cases of this pernicious anæmia.

The sanitary condition, generally speaking, is bad, though much improved during the past two years. In the first place, the city is badly located at the foot of the mountains, on a very flat plain, and the drainage, all surface, is so imperfect that after every hard rain ponds of water form under many houses, remaining some days.

The Portuguese River passes around the eastern and southern sides of the city. Usually nearly dry, in the rainy season it sometimes overflows, doing great damage to life and property and leaving deposits of mud and filth in those parts. From this river, about two miles distant, the water is taken for the city. No attempt is made at filtration and the small reservoir is not large enough to allow the water to settle before it passes on into the mains. After rains the city water becomes muddy simultaneously with that of the river, and it frequently has a bad odor when drawn. From this water system, or from the river itself, the people get their water for all purposes. In the better houses the water is filtered or boiled, or both, but in the others they know nothing and care nothing about such necessity. There are only one or two small sewers which carry the sewerage from the hospitals, jail, and a very few private houses. Instead of sewer connections the houses have open cesspools in the small back yards, or in the house itself, where it is always situated adjacent to the kitchen. These cesspools hold immense quantities and are rarely cleaned, their odor penetrating, many times, into the living rooms and the streets. Recently built houses have flush closets and covered cesspools. The "shacks" of the poorer people usually have no closet of any kind.

The subsoil is loose porous gravel, full of water and, of course, thoroughly contaminated. Fortunately there are no wells.

The streets are macadam, dusty or muddy as the case may be. A more or less efficient street and garbage department is operated by the local board of health.

To sum up the chief predisposing causes, we have a class of people of no great endurance, badly infected with ankylostoma, living in unhygienic surroundings, always on the verge of sickness, so that it needed but a final straw.

Immediate causes.—It is not the province of this report to discuss the hurricane disaster, business stagnation, relief measures, or other causes, why they were in such circumstances, suffice to say that many thousands

during the past year have been living on a very meager diet and many have starved outright. Bananas and plantains, two of their great food staples, were almost entirely destroyed by the hurricane. They ate whatever could be got. Sugar cane, mangoes, and other fruit (often unripe), rice, beans, codfish, and various native tubers, all cooked together in strong grease until it would need the stomach of the proverbial goat to properly digest it. Much of the codfish, generally of the poorest quality, is eaten raw. A poor quality of rum is drunk in large quantities, though drunkenness is rare.

This insufficiency of food was the final straw.

In the table, I have included all the diseases which occur here, and which would be suspected of being the cause of such a death rate, but only three headings show any notable increase, viz, diseases of the digestive apparatus, anæmia and malnutrition, and dysentery. It will be noticed that since July, 1899, the rate has been above normal, taking that month as normal, though it is higher than it should be. The increase began with a jump in August 1899, due to 194 victims of the flood of the 8th of that month. In September, 60 more were found and reported. The number was held up during the months following by the immediate distress of that time, but gradually fell until February, 1900, when it nearly reached the July, 1899, number. By this time, however, the weaker population began to break down under the life of semistarvation, and the death rate began an upward stride, reaching 681 in August, 1900; September shows a decrease of 217, possibly influenced by a diminution of material as well as an improvement in the condition.

I have made a rough classification of the cases according to the most prominent feature, but close lines can not be drawn as the several causes are operating more or less in the same case. Sex seems to have no influence.

(1) *Diseases of the digestive system* are chiefly some form of enteritis, viz:

(*a*) Irritative diarrheas resulting from eating of indigestible and decomposing food. During July, 1900, there were distributed by the city authorities, rations of codfish actually putrid and stinking. It was finally condemned and destroyed by the superior board of health. I have seen many cases of intense diarrhea from eating mangoes of which these people are inordinately fond. These cases present no special symptoms, but once well started are difficult to check, more especially as the irritant is continued, and many cases have no medical attention. In a short time they pass into a chronic, exhaustive, or ulcerative condition with a fatal result sooner or later.

(*b*) Secondary diarrheas are common, supervening upon cases of long-standing anæmia or starvation as the weakness and œdema becomes marked. It seems to be a manifestation of the general weakness, and presents few acute inflammatory symptoms. It often terminates these cases of anæmia, etc.

Malarial diarrheas is very common in the lower coast districts, the children being more affected than the adults. I know many will doubt its malarial origin, but it is well recognized by the physicians here. The following case, which was under my personal care, illustrates this form very well:

A. D., male, aged 2 years. Was sick for ten days or two weeks before I saw the case and history was rather difficult to get. No chills, slight rise of temperature every evening (about 1° C.), slight perspiration, coated tongue, no appetite, thirst, some vomiting at first, abdomen soft with some tenderness, no enlargement of spleen could be deter-

mined, apathetic, but irritable when aroused. Took his medicine well. Had three to ten passages in the twenty-four hours. Treatment for three days consisted of salol, bismuth, and tr. opii camph. in large does, with feeding on egg albumen, boiled milk with limewater. Little effect was obtained, the child becoming semicomatose and took medicine badly. Believing it to be malaria, I gave quinine hydrochl., .30 hypodermatically morning and evening. I was surprised at the marked improvement from the first and after three days quinine was given by the mouth. Rapid recovery followed.

(*c*) Ulcerative diarrheas are many times the final stages of any of the preceding. Characterized by painful abdomen, frequent and exhausting evacuations, often containing more or less blood. These are the cases usually returned under dysentery.

(2) *Anæmia.*—Probably the most prominent are the cases of anæmia, many of whom have no diarrhea, or none until the last. Naturally, the first cause suspected is (*a*) malaria, and anæmia from that cause is often seen, especially in the lowlands, but it can not be the cause of any great proportion of the whole, as the malaria is most prevalent along the coast and this pernicious anæmia occurs in greater number and degree in the high interior. I saw many cases in the hospitals, but very few had the icteric tint of the conjunctiva, enlarged spleen, or gave a malarial history.

A wide difference of opinion exists as to the relative part played by (*b*) the ankylostomum and (*c*) simple starvation. Both occur so often in the same patient and the microscope is used so little to find the ova that it is impossible to differentiate them, as they present practically the same clinical symptoms, remarkable for their variety in the different cases. They appear dull and apathetic, of an ashy or pasty yellow color, with an entire absence of color from the mucous membranes, nails, etc. Both constipation and diarrhea occur, sometimes alternating. Anæmic heart murmers are very constantly found and differ greatly. Nearly every case presents more or less œdema of legs, face, and scrotum, and dropsies are common and extensive, so much so that some physicians have suggested to me that some cases may have been œdemic beriberi, but I have seen nothing but what could be more rationally explained by other causes. While I know that this island lies within the geographical limits of beriberi, still few cases occur in the West Indies. Manson speaks of one from Hayti, but so far as I have been able to find out there has never been a case in Porto Rico. If these are beriberi, they are very atypical.

A generous diet, particularly if combined with constructives, effects a rapid and complete cure in many instances. These are evidently cases of simple starvation. It is often seen, however, that many cases, after a prolonged fast, develop a stubborn diarrhea when put upon good food. Many cases resist treatment even when diet and digestive powers are good. This may be a diagnostic point looking toward the ankylostomum. These cases usually die from sheer exhaustion of their vital powers until heart asthenia closes the scene.

(*d*) Inanition is a common cause of the high percentage of death among infants. Attention is called to the number dying under 1 year.

(3) *Dysentery.*—Of this little need be said. Nearly all these cases are ulcerative diarrhea, passing blood. While there may be some sporadic cases, as often occur in this climate, I do not think many occur here. I have not seen any, and the physicians tell me they rarely see true dysentery.

An interesting feature of the table is the number of cases of tetanus

shown, especially of infantile tetanus. A fairly steady presence of the disease is shown. The infantile cases are almost always due to bad dressing of the cord by the midwives who deliver the vast majority of the pregnancies. A favorite dressing is copaiba oil.

While this report lacks microscopical and exhaustive description, I think it will show why Ponce is having an epidemic death rate without the epidemic. I think the future will show a constant decrease of the number.

Respectfully,

W. W. KING,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

[Inclosure.]

	1899—						1900—								
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.
Under 1 year	42	33	48	72	77	63	41	29	41	55	117	94	104	101	52
Under 2 years	21	18	12	24	21	24	10	7	15	21	33	43	27	35	34
Under 3 years	13	6	11	15	10	11	10	8	9	8	19	18	29	25	12
Under 4 years	3	5	2	8	1	6	12	5	6	4	11	22	22	26	16
Under 5 years	5	a3	a4	3	14	3	.....	2	9	7	10	33	34	45	34
Disease of nervous system	9	5	16	10	10	12	20	9	14	20	10	16	7	11	7
Disease of circulatory system	3	6	8	10	8	8	7	6	7	6	5	10	4	7	8
Disease of respiratory system	6	8	11	16	11	19	16	6	19	27	27	11	13	13	14
Disease of digestive system	71	52	66	100	128	131	91	78	77	120	215	233	279	294	209
Anæmia and malnutrition	22	25	20	45	45	56	31	49	48	60	81	101	159	172	169
Tuberculosis	23	25	25	34	24	25	28	18	31	23	21	18	14	23	14
Typhoid fever	4	.....	.....	.....	2	1	1	1	3	.....	2	.....	1	.....	.....
Smallpox	3	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dysentery	7	4	3	2	22	13	4	2	2	8	34	51	41	9	.....
Grippe	1	.....	.....	.....	.....	.....	2	2	.....	18	2	.....	.....	.....	.....
Malaria	.....	.....	.....	.....	2	3	2	1	.....	5	6	6	40	26	4
Tetanus, traumatic	1	.....	3	.....	2	1	.....	3	1	.....	.....	.....	.....	.....	1
Tetanus, infantile	2	5	5	6	7	1	1	2	5	2	4	4	3	5	5
Others	21	b222	c94	55	25	33	22	20	39	42	36	32	26	121	33
Total	173	354	241	278	287	303	225	197	246	331	443	482	587	681	464

a Drowned not included. *b* 194 drowned. *c* 60 drowned.

Reports from Ponce.

PONCE, P. R., *October 15, 1900.*

SIR: I have the honor to transmit herewith the quarantine and abstract bills of health reports for the week ended October 13, 1900:

Nothing of interest has occurred at this station. I sent to all persons concerned, copies of Assistant Surgeon Lavinder, quoting the paragraph relating to what vessels are to be inspected, as the same procedure will be followed here as at San Juan as near as possible.

The sanitary condition remains about the same, no quarantinable disease is present in this vicinity.

Respectfully,

W. W. KING,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

PONCE, P. R., *October 23, 1900.*

SIR: I have the honor to transmit herewith the weekly quarantine and abstract of bills of health reports for the week ended October 20, 1900.

Four vessels were inspected and 4 four bills of health issued. October 17, schooner *Anna* arrived from Buenas Ayres. She had a month previously been at Maracaibo, but was disinfected at Curacao. I accepted the disinfection and admitted her to pratique. October 19, Spanish steamship *Isle de Panay* arrived from Central and South American suspected ports, and provisional flag steamship *Julia* from Cuba disinfected at Santiago, landed and took passengers.

The sanitary conditions show no change except some lessening of the mortality.

Respectfully, W. W. KING,
Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Inspection of immigrants at Ponce during the two weeks ended October 20, 1900.

PONCE, P. R., *October 15, 1900.*

SIR: I submit herewith report of alien steerage passengers arriving at this port during the two weeks ended October 20, 1900:

October 13, Spanish steamship *Martin Saenz*, from Genoa, Barcelona, Mallorca, Valencia, Malaga, Cadiz, Canary Islands, and San Juan, P. R., 8 immigrants; October 17, French steamship *Salvador*, from Hayti and Santo Domingo, 2 immigrants; October 19, provisional flag steamship *Julia* from Cuba and Santo Domingo, 1 immigrant. Total, 11.

Respectfully, W. W. KING,
Assistant Surgeon U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Inspection af immigrants at San Juan during the two weeks ended October 20, 1900.

SAN JUAN, P. R., *October 16, 1900.*

SIR: I submit herewith report of alien steerage passengers arriving at this port during the two weeks ended October 20, 1900:

Date.	Vessel.	Where from.	No. of immigrants.
Oct. 12	Spanish steamship Martin Saenz.....	Genoa, Barcelona, Palma de Mallorca, Valencia, Malaga, Cadiz, Las Palmas, Tenerife, Santa Cruz de la Palma.	2
Oct. 20	Provisional flag steamship Julia.....	Havana, Nuevitas, Gibara, Baracoa, Santiago de Cuba, Santo Domingo, Macoris, Mayaguez, Ponce.	12
Do.....	Spanish steamship Isla de Panay.....	Havana, Colon, Barranquilla, Puerto Cabello, La Guayra, Ponce.	2
	Total	.....	16

Respectfully, C. H. LAVINDER,

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Assistant Surgeon, U. S. M. H. S.,
Chief Quarantine Officer for Porto Rico.

Inspection of immigrants at the subports of Porto Rico during the week ended October 20, 1900.

SAN JUAN, P. R., *October 22, 1900.*

SIR: I submit herewith report of alien steerage passengers arriving at subports of Porto Rico during the week ended October 20, 1900.

Mayaguez.—October 19, provisional flag steamship *Julia*, from Havana, Nuevitas, Gibara, Baracoa, Santiago de Cuba, Santo Domingo, Macoris, Ponce, with 1 immigrant.

Other subports, no transactions.

Respectfully,

C. H. LAVINDER,
Assistant Surgeon, U. S. M. H. S.,
Chief Quarantine Officer for Porto Rico.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

SCOTLAND.

Report from Glasgow—Status of plague.

GLASGOW, SCOTLAND, *October 15, 1900.*

SIR: I have the honor to make the following report for the week ended October 13, 1900: Nine vessels were inspected and received bills of health. Three of these vessels were sailing for Canadian ports. There were also inspected crew, 400; cabin passengers, 245; steerage, 36; cattlemen, 61. Thirty-six pieces of baggage were inspected and passed and 8 pieces disinfected. No member of crew or passenger was rejected.

The health of this port remains practically the same as at my last report. There has not been a new case of plague for more than three weeks, and the last death occurred on the 6th instant. There have been to date 28 cases with 8 deaths, leaving 20 cases now in hospital. I would call attention to an error in the New York Medical Journal's plague report for September 22 appearing in the issue of that journal for the 29th ultimo. It is there reported that there were 12 cases of plague in Govan on September 4. This should have been 1 case. One death occurred in Govan and was certified as plague. One case of suspected plague was removed from the same borough to Shuldahall Hospital as doubtful plague, and the diagnosis was never confirmed, but probably it was not plague. Two other cases were removed from the Western Infirmary to the Glasgow Fever Hospital, both residing in Govan. The first was pneumonia, and after much discussion has, I think, been decided to have been simple pneumonia. The other was bubonic, and as he had been ill for several weeks no bacteriological diagnosis could be made. Probably this case was plague. He died on the 6th instant. The above 4 cases represent the total of plague or suspected plague in Govan.

An inspection has been established by the board of health of Glasgow of vessels leaving for French ports. This is done in order to avoid detention at those ports. I am informed that vessels leaving here for Canadian ports have been held at Grosse Isle Quarantine Station to complete fourteen days from this port, although they have been inspected and certified at this port.

Respectfully,

A. R. THOMAS,
Passed Assistant Surgeon, U. S. M. H. S.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

State of plague in Glasgow.

GLASGOW, *October 27, 1900.*

Week ended to-day, no cases, no deaths [from plague]; 4 discharged, 10 remain.

THOMAS.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Vessels from Glasgow bound for American ports.

[Cablegram.]

GLASGOW, *October 24, 1900.*

Sailed, Glasgow, *Glitka*, Baltimore, *Norwegian*, Boston, * * * *Ararat*, Nuevitas, Cuba.

THOMAS.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

GLASGOW, *October 27, 1900.*

Sailed to-day from Glasgow, *Hestia*, Newport News; *Sarmatian* and *Marina*, Montreal.

THOMAS.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

TURKEY.

[Report No. 253.]

Report from Constantinople.

CONSTANTINOPLE, *October 5, 1900.*

Public health in Turkey.

SIR: I am happy to state that public health in Turkish land is good. The outbreaks of epidemics by which we have been threatened with are, thank God, over. The official sanitary news forwarded by the sanitary physicians and the local authorities in the different provinces is good. The sanitary reports deal with the details of the epidemic diseases which broke out; said details are already known. I think it only necessary to quote the report of Dr. Pinching, dated Port Said, May 30, 1900. He deals with the outbreak of bubonic plague in said place. He says: "The plague deaths registered April 30 were not the first plague cases met with. It has been proved by the inquest of March 27 that there was a patient whose symptoms were pneumonia and enlargement of the cervical ganglia. He died April 19. The death returns did not present any rise in the number of deaths registered, which means that bubonic plague, as always has been seen in the beginning of epidemics, develops very slowly, and, as a consequence, people live in a false security. Dr. C. T. Grasse," continues Dr. Pinching, "who was the director of the sanitary service in Egypt at the time of the epidemic of bubonic plague in 1835, in his report says that the sanitary steps taken did but retard the spread of the malady, several persons having already entered the city and disseminated the plague in different quarters. During two months everything

was going on nicely, though rare cases of bubonic plage, or suspected to be so, were met with now and then. This evident tranquillity had been a cause of danger, for it did encourage the unskillful and presumptuous physicians who, since the beginning of the epidemic, did not want to believe in the existence of the danger. The same false security did exist in the population. In November, 1835, several bubonic plague cases made their appearance, and their number had risen in December, January, 1835, February, and March, when the number of deaths from bubonic plague had reached that of 200 per day in Alexandria. It was only after the equinox in March that said number dropped to 5 per day."

Public health in Constantinople.

In Constantinople public health is rather good. The number of deaths registered has dropped to the lowest point. Last week, for instance, from September 23 to the 1st instant, only 178 deaths were registered in Constantinople. From August 20 last to the 1st instant, 1,142 deaths were registered, of which 3 were from scarlet fever, 3 from measles, 3 from smallpox, 8 from diphtheria, 32 from acute inflammatory diseases of the respiratory apparatus, and 35 from typhoid fever.

I have the honor to forward (1) a printed copy of the report on the outbreak of bubonic plague in Smyrna, written by Dr. Mizzi, the sanitary physician in said place, and Dr. Loutfi, who is a member of the superior sanitary commission; (2) a French copy of the last decision of said superior sanitary commission concerning quarantine steps against Egypt; (3) a French copy of the answer given by the superior sanitary commission to the report presented by the military physicians who went to Smyrna in order to inquire into the outbreak of the epidemic of bubonic plague in said town, and take, d'accord with the sanitary physicians, the necessary steps for checking the spread of said epidemic.

Respectfully,

SPIRIDION C. ZAVITZIANO,
United States Sanitary Commissioner.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

Foreign and insular statistical reports of countries and cities—Yearly and monthly.

ARGENTINA—*Buenos Ayres.*—Month of August, 1900. Estimated population, 800,000. Total number of deaths, 1,370, including diphtheria, 18; enteric fever, 9; measles, 24; scarlet fever, 9; whooping cough, 1; smallpox, 4, and 178 from tuberculosis.

AUSTRALIA—*Sydney.*—Month of August, 1900. Estimated population, 438,300. Total number of deaths, 469, including diphtheria, 6; enteric fever, 3; plague, 3; leprosy, 1, and 42 from tuberculosis.

BRAZIL—*Pernambuco.*—Two weeks ended September 15, 1900. Estimated population, 200,000. Total number of deaths, 274, including enteric fever, 1; measles, 14; typhus fever, 5, and 13 from smallpox.

BRITISH GUIANA—*Demarara—Georgetown.*—Month of September, 1900. Estimated population, 53,176. Total number of deaths, 133. No contagious diseases reported.

COLOMBIA—*Cartagena.*—Two weeks ended October 13, 1900. Esti-

mated population, 25,000. Total number of deaths, 25. No deaths from contagious diseases reported.

GERMANY—*Hanover.*—Month of August, 1900. Estimated population, 252,274. Total number of deaths, 489, including diphtheria, 1; enteric fever, 1, and 29 from pulmonary tuberculosis.

GREAT BRITAIN—*England and Wales.*—The deaths registered in 33 great towns in England and Wales during the week ended October 6, 1900, correspond to an annual rate of 17.8 a thousand of the aggregate population, which is estimated at 11,610,296. The highest rate was recorded in Manchester, viz, 26.0, and the lowest in Croydon viz, 8.7.

Bradford.—Two weeks ended October 6, 1900. Estimated population, 291,535. Total number of deaths, 145, including diphtheria, 2; enteric fever, 5; measles, 1, and 1 from scarlet fever.

London.—One thousand three hundred and ninety-one deaths were registered during the week, including measles, 4; scarlet fever, 14; diphtheria, 29; whooping cough, 18; enteric fever, 15, and diarrhea and dysentery, 110. The deaths from all causes correspond to an annual rate of 15.8 a thousand. In Greater London 1,891 deaths were registered, corresponding to an annual rate of 14.8 a thousand of the population. In the "outer ring" the deaths included 11 from diphtheria, 3 from measles, 1 from scarlet fever, and 18 from whooping cough.

Ireland.—The average annual death rate represented by the deaths registered during the week ended October 6, 1900, in the 22 principal town districts of Ireland was 20.9 a thousand of the population, which is estimated at 1,062,188. The lowest rate was recorded in Galway, viz, 0.0, and the highest in Tralee, viz, 33.6, a thousand. In Dublin and suburbs 182 deaths were registered, including enteric fever, 3; measles, 1, and 5 from whooping cough.

Scotland.—The deaths registered in 8 principal towns during the week ended October 6, 1900, correspond to an annual rate of 19.3 a thousand of the population, which is estimated at 1,606,935. The lowest mortality was recorded in Perth, viz, 13.5, and the highest in Greenock, viz, 23.2 a thousand. The aggregate number of deaths registered from all causes was 595, including diphtheria, 5; measles, 10; scarlet fever, 7; smallpox, 1, and 18 from whooping cough.

JAMAICA—*Kingston.*—Month of September, 1900. Estimated population, 46,542. Total number of deaths, 74, including 8 from phthisis pulmonalis.

JAPAN—*Formosa.*—Month of August, 1900. Estimated population, 2,797,543. Total number of deaths not reported. Three deaths from typhus fever, 21 from dysentery, and 3 from plague reported.

MALTA—*Valletta.*—Two weeks ended August 30, 1900. Estimated population, 181,698. Total number of deaths, 210, including diphtheria, 1, and 6 from enteric fever.

NICARAGUA—*San Juan del Norte.*—Month of September, 1900. Estimated population, 1,156. No deaths from contagious diseases reported.

NORFOLK ISLAND.—Months of July and August, 1900. Estimated population, 901. One death. No contagious diseases.

ST. HELENA.—Two weeks ended September 16, 1900. Estimated population, 4,270. Total number of deaths, 8, including enteric fever, 1, and 2 from tuberculosis.

SPAIN—*Malaga.*—Two weeks ended September 30, 1900. Estimated population, 100,000. Total number of deaths, 142. No deaths from contagious diseases reported.

SWITZERLAND.—Reports for the two weeks ended September 29, 1900, from cities and towns having an aggregate estimated population of 691,000, give the total number of deaths as 463, including diphtheria, 8; enteric fever, 8; measles, 1; scarlet fever, 1, and 51 from phthisis pulmonalis.

[Reports received from United States consuls through the Department of State and from other sources.]

Cholera, yellow fever, plague, and smallpox as reported to the Surgeon-General United States Marine-Hospital Service from June 29, 1900, to November 2, 1900.

[For reports received from December 29, 1899, to June 29, 1900, see PUBLIC HEALTH REPORTS for June 29, 1900.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
China:				
Hongkong	June 17-June 23		1	On ss. Petrarch, from Saigon.
India:				
Bombay	May 18-Sept. 25		3,971	
Calcutta	Apr. 28-Sept. 22		363	
Karachi	July 2-Sept. 23		60	
Madras	May 19-Sept. 24		187	
Japan:				
Nagasaki	Sept. 11-Sept. 20	1		
Osaka	June 24-Aug. 25	3		
Yokohama	July 8-Sept. 8	4	3	
Straits Settlement:				
Singapore	June 17-Aug. 25		3	

YELLOW FEVER.

Brazil:				
Avare	Feb. 1-Feb. 28		1	
Bahia	June 3-June 9	2		
Casa Branca	Feb 1-Mar. 31		7	
Itu	do		2	
Pedreiras	do		1	
Rio de Janeiro	May 12-Sept. 15		65	
Saboticabal	Mar. 1-Mar. 31		1	
Sao Paulo	Feb. 1-June 30		41	
Santos	do		106	
Sao Bernardo	Mar. 1-June 30		8	
Sorocaba	do		633	
Colombia:				
Barranquilla	June 3-Sept. 23	70	37	
Bocas del Toro	July 25-Sept. 11	5	3	
	Oct. 22	1		
Cartagena	June 1-July 14	28	27	
	Sept. 1-Sept. 14	3	3	
Panama	June 12-Sept. 10	27	6	
Costa Rica:				
Port Limon	Aug. 18-Aug. 22	2	1	On ss. Holstein; 1 on ss. Canada.
Cuba:				
Batabano	Aug. 16-Aug. 22		1	
Cienfuegos	July 21	1		Among United States soldiers.
	Aug. 14-Sept. 22	5	3	
Gibara	Oct. 13-Oct. 16		1	On ss. Julia.
Guanajay	June 30		1	
Havana	June 1-June 30	17	6	
	July 1-Aug. 1	96	30	
	Aug. 1-Aug. 31	254	49	
	Sept. 1-Sept. 30	358	52	
	Oct. 1-Oct. 27	274	67	
Matanzas	July 25		1	In barracks.
Pinar del Rio	July 24-July 30		14	
Sagua, Isabela de	Sept. 17-Sept. 21	2	1	
Santa Clara	June 20-July 22	12		
France:				
Havre	Aug. 9	1		On ss. Caravallas.
	Aug. 10	1		On ss. Santa Fe.
Mexico:				
City of Mexico	May 7-May 13		1	
	Oct. 8-Oct. 14		1	
Cordova	July 1			Yellow fever reported.
Merida	July 21	7	4	
Progreso	June 24-Sept. 30		9	
Tampico	July 23-Oct. 14	9	3	
Vera Cruz	Sept. 2-Oct. 20		81	
West Africa:				
Goree-Dakar	Apr. 16-June 30	15	8	
Rufisque	June 16-June 30			Several cases.

Cholera, yellow fever, plague, and smallpox, etc.—Continued.

PLAGUE.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Aden	Feb. 22-July 3	714	575	
Djiddah	Apr. 26-June 28		78	
Yambo	Apr. 10-June 13		67	
Argentina:				
Buenos Ayres	May 1-May 31	5	5	
Australia:				
Adelaide	Apr. 1-Aug. 11	6	3	
Sydney	Jan. 24-Aug. 25	303	103	
Brazil:				
Campo Grande	June 16	2		
Nictheroy	do	2		
Rio de Janeiro	Apr. 18-Sept. 16	476	238	
China:				
Amoy	May 27-Sept. 1		1,445	Estimated.
Hongkong	Jan. 1-Sept. 8	1,067	1,000	
Egypt:				
Port Said	Apr. 20-Aug. 3	94	38	
Alexandria	May 16-Oct. 16	34	23	
England:				
London	Aug. 3	4	2	
Formosa	Apr. 1-May 31	640	458	
	June 1-July 31	203	165	
Tamsui	Aug. 1-Aug. 31	4	3	
India:				
Bombay Presidency and Sind:				
Ahmedabad City	Apr. 29-Sept. 15	21	21	
Ahmednagar District	do	4	4	
Belgaum District	do	880	572	
Bombay City	do	2,727	1,980	
Dharwar District and Town.	do	21	13	
Nasik District	do	119	81	
Poona City	do	435	320	
Poona District	do	18	13	
Satara District	do	12	12	
Satara Town	do	2	2	
Surat District	do	130	85	
Surat Town	do	2	2	
Thana District	do	512	432	
Belgaum Town	do	31	22	
Kanara District	do	22	17	
Kolaba District	do	44	34	
Ratnagiri District	do	21	17	
Savantvadi State	do		3	
Hyderabad Town	do	3	3	
Karachi City	do	621	472	
Boroda State	do	1		
Cutch State	do	290	224	
Mandir Town	do	112	97	
Kathiawar State	do	80	60	
Bhavnagar Town	do	4	3	
Kolhapur and Southern Mahratta Country.	do	216	164	
Sachin State	do	2		
Savanur State	do	4	2	
Janjira State	do	146	137	
Outside Bombay Presidency and Sind:				
Madras City	do			
Salem District	do	69	50	
Tinnevelly District	do	4	3	
Calcutta	do	1,972	1,951	
Bankura District	do	12	11	
Midnapore District	do	1	1	
Hooghly District	do	14	12	
Howrah Town	do	70	62	
24-Parganas District	do	24	19	
Monghyr District	do	86	76	
Monghyr Town	do	47	35	
Saran District	do	122	94	
Chapra Town	do	153	130	
Patna District	do	580	524	
Patna City	do	8	4	
Dinapur Town	do	75	69	
Bihar Town	do	133	133	
Cuttack District	do	3	2	

Cholera, yellow fever, plague, and smallpox, etc.—Continued.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
India—*Continued.*				
Outside Bombay Presidency and Sind—*Cont'd.*				
Jullundur District	Apr. 29-Sept. 15	82	48	
Hoshiarpur District	do	27	9	
Nagpur City	do	22	21	
Nagpur District	do	2		
Bangalore Civil and Military Station and city.	do	370	272	
Mysore City	do	1,178	911	
Mysore District	do	160	130	
Kolar Gold Fields	do	9	7	
Tumkar District	do	73	61	
Lingsuagur District	do	59	58	
Gulburga District	do	1	1	
Japan:				
Nagasaki	June 6	1	1	Taken from a vessel from the Goto Islands.
Osaka	Apr. 8-July 16	47	38	
	Sept. 11-Sept. 27	26		
Sakai	June 30	1		
Shidzuoka Ken	May 6-July 7	16	13	
Madagascar:				
Antananarivo	Oct. 16			Plague reported.
Paraguay:				
Asuncion	July 24-July 31	12	2	
Philippine Islands:				
Cavite	June 17-June 23	1		
Cebu	July 25	1		
Manila	Jan. 1-Sept. 15	216	146	
Portugal:				
Oporto	June 23	1		
Scotland:				
Glasgow	Aug. 31-Oct. 6	28	8	
Govan	Sept. 4	1	1	
Turkey:				
Beirut	July 20	4		
Constantinople	Aug. 27	1		On ss. Niger from the Island of Syros.
Smyrna	June 18-Aug. 6	22	11	
Wales:				
Llandaff	Oct. 4	1	1	From Rosario.

SMALLPOX.

Arabia:				
Aden	May 1-May 31		3	
Argentina:				
Buenos Ayres	Apr. 1-Aug. 31		13	
Australia:				
Sydney	June 2	264	92	
Austria:				
Prague	June 3-Sept. 29	52		
Belgium:				
Antwerp	June 24-Sept. 29	12	3	
Brussels	Jply 1-July 7		1	
Ghent	Aug. 5-Sept. 15		4	
Brazil:				
Pernambuco	July 1-Sept. 15		21	
Rio de Janeiro	May 12-Sept. 15		110	
China:				
Amoy	Apr. 14-May 12			A few cases
Hongkong	May 20-June 9	2		
Cos	Apr. 1		235	
Colombia:				
Barranquilla	June 24-June 30		1	
Costa Rica:				
Port Limon	Aug. 8	1		
Cuba:				
Manzanillo	July 29-Aug. 6	2		
Egypt:				
Alexandria	Aug. 28-Sept. 3	1		
Cairo	May 21-Sept. 30		19	
England:				
Liverpool	June 10-Oct. 13	44	7	
London	do	95		
Manchester	do	1		
Southampton	do	5		
West Hartlepool	Sept. 30-Oct. 13	3		

Cholera, yellow fever, plague, and smallpox, etc.—Continued.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Formosa	Apr. 1–Aug. 31	237	128	
France:				
Bordeaux	May 1–June 30		4	
Lyons	June 3–Sept. 1		15	
Marseilles	July 1–Aug. 31		14	
Nice	June 6–June 30	1		
Paris	June 17–Sept. 29		45	
St. Etienne	June 1–Sept. 30	30	7	
Germany:				
Berlin	Aug. 10	3		
Frankfort-on-the-Main	June 10–July 20		4	
Königsberg	July 1–Sept. 15	4	1	
Gibraltar	July 2–Oct. 7		4	
Greece:				
Athens	June 10–Oct. 6	21	14	
India:				
Bombay	May 18–Sept. 25		99	
Calcutta	Apr. 19–May 5		40	
	June 24–Sept. 22		124	
Karachi	May 10–Sept. 2		47	
Madras	May 26–Sept. 24		5	
Italy:				
Genoa	June 10–June 16	3		
Naples	Oct. 17	12		
Japan:				
Nagasaki	May 21–June 20	3		
Osaka and Hiogo	June 3–June 9	1		
Korea:				
Seoul	May 20–May 26			Endemic.
Malta:				
Valetta	May 1–July 15	24	3	
Mexico:				
Chihuahua	May 27–July 7		6	
City of Mexico	May 6–Oct. 14	244	172	
Merida	July 21			Smallpox reported.
Vera Cruz	June 17–Oct. 13		64	
Netherlands:				
Rotterdam	July 22–July 28	1		
Ontario:				
Port Arthur	June 1–June 27	2	1	
Philippine Islands:				
Guimeras Island	July 1		18	
Iloilo	July 1–July 31		1	
Manila	Jan. 1–Sept. 8	35	1	
Quebec:				
Compton County	May 12–June 23	1		
Gaspe County	May 20–June 23	1		
Hochelaga County	May 6–Aug. 15	2	1	
Iberville County	July 26–Aug. 27	2		
Montreal County	Apr. 22–Aug. 31	28	10	
Quebec County	Apr. 15–June 23	8		
Rimouski County	Feb. 3–July 31	129		
Russia:				
Moscow	May 27–Oct. 6	106	30	
Odessa	June 3–Oct. 6	85	23	
Riga	Apr. 1–May 31		26	
St. Petersburg	June 10–Oct. 6	635	176	
Vladivostock	Apr. 1–July 31	11		
Warsaw	May 27–Oct. 6		99	
Scotland:				
Dundee	Aug. 25–Sept. 29	3		
Edinburgh	Sept. 9–Sept. 15	3		
Glasgow	June 16–Oct. 19	83	5	
Spain:				
Barcelona	Aug. 19–Sept. 30		54	
Corunna	July 15–Sept. 29		3	
Madrid	May 20–Sept. 1		257	
Straits Settlements:				
Singapore	May 11–July 7		10	
Switzerland:				
Geneva	June 10–July 14	9		
Zurich	June 24–Aug. 11	2		
Uruguay:				
Montevideo	May 20–May 26	1		
Yukon Territory:				
Dawson	July 20–Sept. 26	11		

WEEKLY MORTALITY TABLE, FOREIGN AND INSULAR CITIES.

Cities.	Week ended.	Estimated population.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Aix la Chapelle	Oct. 13	134,196	54	1	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Alexandretta	Oct. 6	8,000	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alexandria	Sept. 24	335,000	220	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....
Do	Oct. 1	335,000	171	.....	.....	.....	.....	.....	.....	3	.....	2	.....	1
Amsterdam	Oct. 13	515,938	127	.....	.....	.....	.....	.....	.....	.....	1	2	2	1
Antigua	do	13,000	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Antwerp	Oct. 6	293,111	83	4	.....	.....	.....	.....	.....	2	.....	1	.....	1
Asuncion	Sept. 8	70,000	9	.....	.....	.....	.....	.....	3	.....	3	1	.....	.....
Barmen	Oct. 6	141,000	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Barranquilla	Oct. 7	40,000	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Belfast	Oct. 13	359,000	133	.....	.....	.....	.....	.....	.....	4	.....	2	.....	1
Belize	Oct. 18	13,000	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belleville	Oct. 21	10,513	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bergen	Oct. 10	68,000	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Berlin	Sept. 29	1,863,864	653	.....	.....	.....	.....	.....	.....	8	12	12	7	.....
Birmingham	Oct. 13	519,610	188	.....	.....	.....	.....	.....	.....	5	1	.....	1	1
Bluefields	Oct. 14	4,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bombay	Sept. 25	821,764	1,026	147	89	64	.....	1	.....	2	.....	.....	.....	.....
Bremen	Oct. 6	145,000	59	5	.....	.....	.....	.....	.....	.....	2	.....	2	.....
Breslau	do	300,000	196	24	.....	.....	.....	.....	.....	1	1	3	.....	5
Bristol	Oct. 13	324,973	106	.....	.....	.....	.....	.....	.....	.....	2	.....	1	1
Brussels	Oct. 6	600,000	156	.....	.....	.....	.....	.....	.....	4	.....	3	.....	2
Budapest	Oct. 7	640,000	.....	.....	.....	.....	.....	.....	.....	1	3	1	3	.....
Cairo	Sept. 30	570,062	302	.....	.....	.....	.....	1	1	.....	.....	5	.....	.....
Calcutta	Sept. 22	681,560	461	.....	24	7	.....	6	.....	.....	.....	.....	.....	.....
Callao	Sept. 23	30,000	23	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Catania	Oct. 11	124,000	70	.....	.....	.....	.....	.....	2	3	.....	.....	.....	.....
Chihuahua	Oct. 13	25,000	22	.....	.....	.....	.....	.....	.....	1	.....	6	1	.....
Coburg	Oct. 6	20,570	12	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colombo	Sept. 15	130,000	92	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Do	Sept. 22	130,000	119	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Colon	Oct. 16	8,000	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Corunna	Oct. 13	40,500	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crefeld	do	108,183	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Curaçoa	Oct. 6	30,303	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 13	30,303	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dublin	do	349,594	183	.....	.....	.....	.....	.....	.....	4	.....	1	.....	1
Dundee	Oct. 6	167,584	66	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Do	Oct. 13	167,584	66	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Edinburgh	Oct. 6	302,262	103	.....	.....	.....	.....	.....	.....	.....	.....	2	3	2
Flushing	Oct. 15	19,034	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Frankfort-on-the-Main	Oct. 6	278,000	71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Funchal	Oct. 14	36,982	14	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ghent	Oct. 13	163,030	75	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Gibraltar	Oct. 7	25,900	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Girgenti	Oct. 6	24,428	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 13	24,248	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glasgow	Oct. 19	743,969	272	.....	1	.....	.....	2	.....	4	5	4	1	10
Gothenburg	Oct. 6	126,849	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand Canary	do	114,300	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Halifax	Oct. 20	45,000	13	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Hamburg	Oct. 13	691,349	212	.....	.....	.....	.....	.....	.....	.....	5	7	.....	2
Havre	Oct. 6	119,470	85	13	.....	.....	.....	.....	.....	18	.....	.....	.....	.....
Hongkong	Aug. 25	259,310	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Sept. 1	259,310	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Sept. 8	259,310	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Karachi	Sept. 23	98,195	72	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....
Kingston, Canada	Oct. 26	18,300	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Königsberg	Oct. 6	183,273	.....	.....	.....	.....	.....	.....	.....	.....	5	2	.....	.....
La Palma, Spain	Sept. 30	5,897	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
La Rochelles	Oct. 7	30,000	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leeds	Oct. 13	431,287	145	.....	.....	.....	.....	.....	.....	3	.....	7	3	.....
Leghorn	Sept. 29	104,829	46	2	.....	.....	.....	.....	.....	2	1	.....	.....	.....
Do	Oct. 6	104,829	29	.....	.....	.....	.....	.....	.....	2	.....	1	.....	.....
Leipsic	do	439,200	185	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
Leith	do	78,509	24	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Licata	do	20,000	12	.....	.....	.....	.....	.....	3	2	.....	.....	.....	.....
Do	Oct. 13	20,000	14	.....	.....	.....	.....	.....	3	1	.....	.....	.....	.....
Liege	Oct. 6	172,168	46	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Liverpool	Oct. 13	668,645	282	.....	.....	.....	.....	.....	.....	3	4	4	4	6
London	Oct. 6	6,652,145	1,891	.....	.....	.....	.....	.....	.....	21	15	40	7	36
Lyons	do	500,000	147	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	1
Mainz	Oct. 13	84,000	21	6	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Manchester	do	505,864	257	22	.....	.....	.....	.....	.....	1	3	3	2	1
Mannheim	Oct. 6	135,871	38	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

WEEKLY MORTALITY TABLE, FOREIGN AND INSULAR CITIES—Continued.

Cities.	Week ended.	Estimated population.	Total deaths from all causes.	Deaths from—									
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Matamoras	Oct. 13	18,266	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Messina	do	107,000	15	1	.....	.....	.....	.....	.....	3	.....	.....	.....	.....
Mexico	Oct. 7	344,377	343	39	.....	.....	.....	.....	11	.....	.....	.....	1	1
Do	Oct. 14	344,377	357	42	.....	.....	1	1	10	1	.....	.....	.....	.....
Monterey	Oct. 12	25,000	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 21	25,000	44	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moscow	Sept. 29	1,000,000	500	.....	.....	.....	.....	1	.....	6	2	4	8	6
Do	Oct. 6	1,000,000	418	.....	.....	.....	.....	.....	1	4	9	4	4	5
Nagasaki	Sept. 20	131,000	.....	.....	.....	.....	.....	.....	5	.....	.....	1	.....	.....
Newcastle-upon-Tyne	Oct. 20	234,369	80	.....	.....	.....	.....	.....	.....	.....	.....	2	4	.....
Nottingham	Oct. 6	250,000	64	.....	.....	.....	.....	.....	.....	3	1	1	.....	1
Do	Oct. 13	250,000	84	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	4
Nuremberg	Sept. 29	244,406	164	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Odessa	Oct. 6	434,600	195	.....	.....	.....	.....	1	1	9	14	.....	1	.....
Palermo	do	300,000	102	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 13	300,000	95	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Plymouth	do	101,848	35	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	1
Puerto Cortez	Oct. 17	2,000	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quebec	Oct. 20	73,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rheims	Oct. 6	107,963	39	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
Do	Oct. 13	107,963	39	4	.....	.....	.....	.....	.....	.....	.....	.....	3	.....
Rome	Sept. 8	518,333	134	10	.....	.....	.....	.....	.....	5	.....	.....	.....	.....
Rotterdam	Oct. 13	327,815	88	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
St. John, New Brunswick.	Oct. 20	45,000	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Petersburg	Sept. 29	1,267,063	553	.....	.....	.....	.....	.....	.....	28	17	18	4	8
Do	Oct. 6	1,267,063	456	.....	.....	.....	.....	.....	.....	27	9	20	10	10
St. Stephen, New Brunswick.	Oct. 20	3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santa Cruz de Teneriffe	Oct. 6	30,000	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Singapore	Sept. 8	97,111	211	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Smyrna	Oct. 7	300,000	34	10	.....	.....	.....	.....	.....	4	.....	.....	.....	.....
Solingen	Sept. 30	16,000	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Southampton	Oct. 13	105,831	20	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
South Shields	Oct. 20	105,677	55	7	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
Stuttgart	Oct. 11	162,934	53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stettin	Oct. 6	155,000	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Sunderland	Oct. 13	147,398	59	.....	.....	.....	.....	.....	.....	3	1	.....	.....	.....
Tampico	Oct. 14	18,000	13	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Trapani	Oct. 6	48,743	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 13	48,743	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trieste	Oct. 6	166,499	75	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....
Tuxpam	Oct. 15	13,392	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vera Cruz	Oct. 20	25,000	39	4	.....	.....	5	.....	.....	.....	.....	.....	.....	.....
Warsaw	Sept. 29	645,848	315	.....	.....	.....	.....	15	3	1	10	1	7	4
Do	Oct. 6	645,845	338	.....	.....	.....	.....	13	.....	7	19	4	7	2
Windsor, Nova Scotia	Oct. 20	3,000	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winnipeg	Sept. 20	25,642	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Oct. 13	25,642	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....
Yokohama	Sept. 22	160,439	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Zurich	Oct. 6	162,169	61	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2

By authority of the Secretary of the Treasury:

WALTER WYMAN,
Surgeon-General U. S. Marine-Hospital Service.